G.B. Reed Groundfish Cruise No. 84-3, May 24 - June 14, 1984

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ABSTRACT

Westrheim, S. J., A. V. Tyler, R. P. Foucher, M. W. Saunders, and S. C. Shields. 1984. G.B. REED groundfish cruise no. 84-3, May 24-June 14, 1984. Can. Data Rep. Fish. Aquat. Sci. 488: 131 p.

During May-June 1984, the R/V G.B. REED completed its share of a two-vessel synoptic trawl survey of groundfish species occupying the shelf area (10-79 fath; 18-144 m) of Hecate Strait. Purpose of the survey was to collect information on species assemblages, as a first step towards development of an ecological basis for mixed-species stock assessment. This report contains the results of the survey--species weight and number caught and length-frequencies, by haul (63 usable). Supplementary information collected dealt with stomach contents (14 species), length-weight data (12 species), water temperatures and vertical plankton hauls (Hecate Strait and Queen Charlotte Sound), and surficial sediments.

Key words: groundfish, species assemblages, size composition, stomach contents, length-weight, hydrography, plankton, surficial sediments, Hecate Strait

RÉSUMÉ

Westrheim, S. J., A. V. Tyler, R. P. Foucher, M. W. Saunders, and S. C. Shields. 1984. G.B. REED groundfish cruise no. 84-3, May 24-June 14, 1984. Can. Data Rep. Fish. Aquat. Sci. 488: 131 p.

En mai et juin 1984, le G.B. REED a complété sa part d'un levé synoptique des poissons démersaux par chalutage, entrepris par deux navires sur la plate-forme du détroit d'Hécate (10-79 brasses; 18-144 m). Ce levé visait la collecte de données sur les rassemblements d'espèces comme étape préliminaire à l'élaboration d'une base écologique pour l'évaluation des stocks composés de plusieurs espèces. Le présent rapport contient les résultats du levé, en fonction de 63 traits utilisables: poids et nombre capturé par espèce et fréquences des longueurs. D'autres données portent sur les contenus stomacaux (14 espèces), les relations longueur-poids (12 espèces), la température de l'eau, les traits verticaux d'échantillonnage du plancton (détroit d'Hécate et bassin Reine-Charlotte) et les sédiments superficiels.

Mots-clés: poissons démersaux, rassemblements d'espèces, composition par taille, contenus stomacaux, longueur-poids, hydrographie, plancton, sédiments superficiels, détroit d'Hécate

INTRODUCTION

This work was carried out as part of the Hecate Strait Project to develop an ecological basis for alternative, mixed-species, assessment techniques. The cruise was coordinated with that of the F/V ARCTIC OCEAN, a commercial trawler under charter during the same time period. The purpose of the two-vessel operation was to provide synoptic survey data that would lend itself to a mapping of fish assemblages available to otter trawls working the sea bottom. The maps are meant to display the changes in relative abundance of species throughout Hecate Strait. The strategy is based on the observation that the mix of species changes in different parts of any given region of continental shelf. Conversely, there are usually strong similarities in the species compositions among some sites. These fairly homogeneous groupings are sometimes termed "assemblages". The systematic classification of similar and dissimilar sites, and the subsequent mapping of the resulting species composition patterns has been carried out for many years by plant ecologists as well as workers studying benthic infauna. During the last 15 years applications have been made to the distributions of marine fishes. The data reported here provide the basis for the first application of the techniques to research surveys of fishes on Canada's Pacific coast.

This report contains the results of the G.B. REED cruise. A second Data Report will contain the results of the ARCTIC OCEAN cruise.

MATERIALS AND METHODS

FISHING VESSEL

The R/V G.B. REED is a 775-ton side trawler powered with a 1000-hp diesel engine, and equipped with a controllable-pitch propeller. Overall length is 177' (80 m).

FISHING GEAR

Fishing gear consisted of a Yankee 36 trawl net connected to 2000-lb Brompton otter boards by 30-fath sweeplines. The groundline consisted of 7-inch rubber discs strung on steel cable, and was suspended from the fishing line by 12 links of 1-inch chain beckets at intervals of 24 inches.

Ten consecutive meshes were measured (internal) from each section of the trawl, after haul no. 62. Mean internal measurements (mm) were as follows:

Section	Internal measure (mm)
Rt. wing	125
Body	125
Intermediate #1	79
Intermediate #2	66
Codend	25

Location of meshes to be measured was selected, arbitrarily, away from any seams or supporting structures.

SURVEY DESIGN

The two vessels operated within the constraints of a single survey design. Three factors had to be accounted for in laying out the design.

1. Since it is known that assemblages change with depth, it was necessary to have stations more densely packed in areas with more variation in depth.

2. Within areas of similar depth stations had to be spaced more or less evenly, since it is known that when stations are moderately clumped within an area of a homogeneous assemblage, those stations will tend to be identified together as a new assemblage by the statistical cluster techniques. For this reason strictly random placement of stations is not completely suitable for the objective of this survey. Random placement usually leads to some stations being somewhat grouped.

3. To ensure complete coverage of the region, it was necessary to adopt a systematic sampling approach in part.

To take account of factors 2 and 3 a grid of 10-nautical-mile blocks was superimposed on a navigation chart of Hecate Strait to guide placement of the stations (Fig. 1). To account for the depth factor, each 10-nautical-mile block of the grid was divided into strata of 10-fath (18-m) intervals. The stratification was based on fathoms rather than meters because navigation charts and echo sounders in common use at the time were not metric. We thus defined a stratum as a 10-fath depth interval within a grid block. The shallowest depth interval was 10 to 19 fathoms (18-35 m), and the deepest was 70 to 79 fathoms (128-144 m). Blocks were labelled A to L from north to south, and 1 to 5, west to east. Depth strata were numbered 1 to 7 (10-19 fath to 70-79 fath). Thus a trawling station at 25 fath in the most northwesterly block would be identified as A1-2. By this arrangement 139 stations (block-strata) were defined. To sample these stations, one trawl haul was scheduled at each. Because two vessels were involved in the survey, it was considered desirable that some strata were occupied by both vessels to

facilitate a comparison of the assemblage maps produced from the data of each. Generally the shallower strata were assigned to the F/V ARCTIC OCEAN, and the deeper strata were assigned to the G.B. REED. Consistent with this plan, the strata that both vessels occupied were mostly at the intermediate depths.

To facilitate further the comparison between vessels, three simultaneous, side-by-side hauls were scheduled for a time during the study mutually convenient to the two vessels.

While the number of stations and hauls per stratum was determined well in advance of the cruise, the selection of the specific location of each station within a stratum was made by the vessel captain, who searched the stratum for trawlable bottom and decided whether a set could be made.

CATCH PROCESSING

Each trawl catch was segregated by species into plastic containers (ca. 50-kg capacity), hereafter referred to as "tubs". Weight of each tub was obtained with a platform scale, to the nearest kilogram. When the catch of any species exceeded 7 full tubs, total weight was calculated from a subsample of 6 tubs (first two/ middle two/ last two, plus last partially-filled tub) as described by Westrheim (1967).

LENGTH FREQUENCIES

Fork length was recorded to the nearest centimeter for most of the species caught, except spiny dogfish, which were measured total length, with the tail bent down in line with the body. For most dogfish, sex was also recorded based on external characteristics. Exceptions to measuring all specimens caught involved: (a) large catches of individual species and (b) ratfish.

For "large" catches (ca. $\geq$300 specimens) of individual species, sampling schemes were employed to reduce catch-processing time. Most schemes followed, or were modifications of, that reported by Westrheim (1967). For example, in Haul 9, total catch of Dover sole was 726 kg, but only 284 kg (345 specimens) were sampled for length frequencies. The sample consisted of all Dover sole in the first two, middle two, and last two full tubs. Estimated numbers caught was $\underline{882} = (726)(345) / (284)$.

For ratfish, broken tails were fairly common, and during hauls 1-28, those specimens missing substantial portions of their tails were discarded and not recorded. Thereafter, "fork" length was estimated and recorded to the nearest 5-cm interval (10-14, 15-19, etc.). For hauls 1-28, the length-weight

table was used to calculate the weight of the ratfish measured. If this weight was appreciably lower than that of the total catch, then the numbers measured were extrapolated to estimated numbers caught by the ratio of weight caught to weight measured. For example, in Haul 5, 109 ratfish were measured, and their estimated weight was 134 kg. Total weight of all ratfish was 161 kg. Estimated numbers caught was $\frac{131}{}$ = (161)(109)/(134). No extrapolation was made if the two weights differed slightly.

STOMACH SAMPLES

Stomachs were preserved for detailed analysis ashore from preselected hauls in northern Hecate Strait. Stratified samples of 10 stomachs, containing food, per 10-cm length interval for each species were taken from hauls 8 to 12 while 25 stomachs containing food per 10-cm length interval were collected from species present in hauls 16 to 19. Sampling intensity varied because of time constraints.

The stomachs were removed by cutting the esophagus as close as possible to the mouth and by cutting the intestine just posterior to the stomach. In the case of ratfish the entire gut was preserved because of the poorly defined stomach. The stomachs were sealed in individual plastic bags (Whirlpak) with 10% formalin in seawater. Records of individual fish length and the incidence of empty stomachs were kept.

LENGTH-WEIGHT SAMPLES

Length-weight data were collected for selected species using a cumulative stratified sampling scheme -- 25 specimens (sexes combined) per 5-cm interval of fork length. As fish were measured fork length, they were deposited in plastic buckets labelled 10-14, 15-19,etc. Buckets and contents were weighed on a spring scale (to nearest kilogram), or on an electronic balance (digital readout), to the nearest gram. Net weight of the bucket contents and numbers of specimens in the bucket were then recorded. When few specimens were collected in the two extreme size intervals, those at the top and bottom of the interval were discarded. For example if in the 70-74 cm interval, five specimens were collected, only those 71-73 cm FL were included for weighing.

WATER TEMPERATURES

Water temperatures were collected at selected stations with an expendable bathythermograph (XBT).

PLANKTON

Vertical plankton samples were collected with a 350-mesh SCOR net. The net was lowered to 1 m from the bottom and raised at approximately 1 m per second. Samples were preserved in 10% formalin in seawater for future processing.

SURFICIAL SEDIMENTS

Surficial sediments were sampled with a Shipek Grab opportunistically from a grid of stations located at 2-mile intervals throughout Hecate Strait, except for two sectors which had been adequately sampled previously by the G.B. REED and/or vessels from the Pacific Geo-Science Center (Patricia Bay, B.C.). Sampling occurred after trawling ceased, and usually during 2000-0200 h. Sampling was conducted by Mrs. Trudy Forbes (Pacific Geo-Science Center), with the assistance of one crewman and Mr. Mark Labelle (UBC).

RESULTS

GENERAL

A total of 72 trawl hauls were completed, of which 64 were deemed "usable". The eight "unusable" hauls were disqualified due to snags (3), mixed depth strata (2), fouled gear (2) or aborted due to untrawlable bottom (1) (Table 1).

Total fish catch from usable hauls was 27,168 kg (54,614 specimens), comprising at least 38 species (Table 2). Principal species by weight were arrowtooth flounder, spiny dogfish, English sole, ratfish, and Dover sole -- 63% of the total catch. Principal species by numbers were English sole, arrowtooth flounder, rex sole, ratfish, and Dover sole -- 79% of the total catch.

Detailed records of all trawl hauls, and catch weights by species, are contained in Appendix table 1. An index to common and scientific names of all fish species caught is contained in Appendix table 2.

Total recorded catch of invertebrates from usable hauls was 139 kg (Table 2). Details by category and haul are contained in Appendix table 3.

TRAWLING SCHEME

The R/V G.B. REED was assigned 63 of the trawling stations, from A2-5 to L5-7 (Fig 1; Table 3). Eight stations were rejected, and one was inadvertently omitted. Three additional and unscheduled stations were trawled successfully, and seven stations were successfully replicated (Table 4). Table 5 lists the unoccupied stations and the reasons for omission.

Three stations were occupied simultaneously by the two trawlers -- J4-4, I4-5, and I5-6. G.B. REED hauls were 66, 67, and 68, respectively.

LENGTH FREQUENCIES

Fork (or total) lengths (cm) were recorded for 39,343 specimens (est. 54,614 caught). In most cases, all specimens caught were measured. Catch-sampling occurred for one or two species in 12 hauls, and computations of total numbers caught are shown in Table 6, together with method of sampling. For ratfish, computations of numbers caught for hauls 1-28, are shown in Table 7.

Table 2 contains an index to appendix tables containing length-frequency (or individual length) records, by haul, for each species.

For various reasons, lengths were not recorded for some species. A record of these omissions is contained in Table 8.

STOMACH CONTENTS

Stomachs containing at least some food were collected, and preserved, from 1218 specimens comprising 13 species (Table 9). Principal species were arrowtooth flounder (N=148), Dover sole (220), English sole (163), rex sole (189), dogfish (140), and ratfish (161). Processing of the stomachs is scheduled for June-August at the Pacific Biological Station.

LENGTH-WEIGHT

Length-weight data were collected from 1437 specimens, comprising 12 species (Table 10). Details on individual species are contained in Appendix table 28. Principal species were arrowtooth flounder (N=378), English sole (227), flathead sole (102), Pacific sanddab (176), rex sole (202), and ratfish (290).

WATER TEMPERATURES

Sixteen XBT casts were completed -- 8 each in Queen Charlotte Sound and Hecate Strait (Fig. 2). Two stations were replicated, both in southeastern Queen Charlotte Sound. At these two stations, water temperature at 75 m (41 fath) were 8.6 and 9.1°C on May 24 and 8.0 and 8.3 on June 13 (Appendix table 29). In general, water temperatures were "warm" except in Dixon Entrance (Station 33).

PLANKTON

Vertical plankton hauls were made at 11 hydrographical stations -- 8 in Queen Charlotte Sound and 3 in Hecate Strait (Fig. 2).

SURFICIAL SEDIMENTS

A total of 217 samples of surficial sediments were collected with a Shipek grab, by the technician from the Pacific Geo-Science Center (Patricia Bay). All collections were made after trawling terminated for the day -- usually 2000 h-0200 h. *In situ* assessments of the samples are contained in Appendix table 30. Final analysis will take place at the Pacific Geo-Science Center.

In addition to the sediment sampling, a hydrophone was lowered periodically to listen for signals from a displaced on-bottom current meter.

MISCELLANEOUS

A collection of *Cymatogaster aggregatus* were frozen for parasite studies by Dr. H. Arai at the Pacific Biological Station.

A collection of juvenile *Sebastes alutus* were frozen for age-determination studies by B. M. Leaman at the Pacific Biological Station.

Heads were collected and frozen from mature specimens of 7 species for later analysis of the reproductive hormone LHRH (luteinizing hormone-releasing hormone). The structure of the LHRH molecule is being studied by Joachim Carolsfeld at the University of Victoria. Numbers of specimens sampled by species were: arrowtooth flounder, 25; eelpout, 2; English sole, 25; Pacific halibut, 25; petrale sole, 25; ratfish, 25; and silvergray rockfish, 25.

PERSONNEL

Pacific Biological Station

A. V. Tyler (i/c)	May 24-31
S. J. Westrheim	May 24-June 14
R. P. Foucher	May 24-June 14
M. W. Saunders	May 24-June 14
S. C. Shields	May 24-June 14

Pacific Geo-Science Center

T. H. Forbes	May 24-June 14

University of British Columbia

M. Labelle	May 24-June 14

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Table 1. Unusable trawl hauls, by location and cause, of the R/V G.B. REED during Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Haul no.	Block-strata	Cause	Substitute haul(s)
3	L4-6	Fouled gear	4,70
25	D4-3	Snag	None
35	F4-5	Mixed depth strata	36,48
50	H4-6	Snag	None
55	I5-7	Mixed depth strata	56
59	J5-7	Aborted. Bad bottom	None
64	K5-7	Snag	None
65	I4-5	Fouled gear	67

Table 2. Total weight (kg) and numbers, by species, of fish specimens caught in usable hauls during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (See appropriate appendix tables for length frequencies.)

	Weight (kg)	Numbers	Appendix table
Flatfish			
Arrowtooth flounder	7051	4101	4
Butter sole	6	27	20
Curlfin sole	4	15	20
Dover sole	2149	3780	5
English sole	3254	15491	6
Flathead sole	103	722	7
Pacific halibut	1334	287	21
Pacific sanddab	371	2923	8
Petrale sole	181	216	20
Rex sole	1365	8410	9
Rock sole	378	860	10
Slender sole	4	70	20
Sub-total	16200	41902	
Other Roundfish			
Lingcod	359	65	23
Pacific cod	537	376	15
Sablefish	576	1545	16
Walleye pollock	368	821	17
Eelpout	T	7	24
Eulachon	6	315	18
Herring	1	48	25
Pacific hake	T	6	24
Poacher	1	56	24
Sandlance	T	2	24
Sculpin	T	7	24
Shiner perch	1	38	24
Tomcod	3	2	24
Sub-total	1852	3288	
Rockfish			
S. alutus	109	712	11
S. babcocki	2	1	22
S. brevispinis	446	244	12
S. flavidus	55	45	22
S. maliger	4	3	22
S. paucispinis	820	187	13
S. pinniger	324	159	14
S. proriger	T	1	22
Sub-total	1760	1352	
Selachii			
Ratfish	2981	6478	19
Skate--big	28	6	26
Skate--black	9	15	26
Skate--longnose	397	40	26
Spiny dogfish	3941	1429	27
Subtotal	7356	7968	
Grand totals	27168	54510	
Invertebrates	139	-	

Table 3. Inventory of scheduled trawl hauls by the F/V ARCTIC OCEAN (A) and R/V G.B. REED (R), by block and depth strata, in Hecate Strait, May-June 1984.

	Depth strata[a]							Scheduled hauls		
Block	1	2	3	4	5	6	7	A	R	Total
A-2	-	-	-	-	R	R	R	-	3	3
-3	-	-	A	A/R	R	R	R	2	4	6
B-1	A	A	A	A	A/R	R	R	5	3	8
-2	A	A	A	A	A/R	R	R	5	3	8
-3	A	A	A	A/R	R	R	-	4	3	7
C-2	A	-	-	-	-	-	-	1	-	1
-3	A	A	A/R	R	R	-	-	3	3	6
D-2	A	-	-	-	-	-	-	1	-	1
-3	A	A	A/R	R	-	-	-	3	2	5
-4	A	A	A/R	R	-	-	-	3	2	5
E-2	A	A	-	-	-	-	-	2	-	2
-3	A	A/R	R	-	-	-	-	2	2	4
-4	-	A	A	A	A/R	R	R	4	3	7
-5	-	A	A	R	R	R	-	2	3	5
F-2	A	-	-	-	-	-	-	1	-	1
-3	A	A	A	-	-	-	-	3	-	3
-4	-	A	A	A	A/R	R	R	4	3	7
G-1	A	-	-	-	-	-	-	1	-	1
-2	A	-	-	-	-	-	-	1	-	1
-3	A	A	A/R	R	R	-	-	3	3	6
-4	-	-	-	A	A	A	A	4	-	4
H-2	A	-	-	-	-	-	-	1	-	1
-3	A	A/R	R	R	-	-	-	2	3	5
-4	-	-	-	-	A	A/R	R	2	2	4
I-2	A	-	-	-	-	-	-	1	-	1
-3	A	A	A	-	-	-	-	3	-	3
-4	A	A	A	A/R	R	R	R	4	4	8
-5	-	-	-	A	A	A/R	R	3	2	5
J-2	A	-	-	-	-	-	-	1	-	1
-3	A	-	-	-	-	-	-	1	-	1
-4	A	A	A	R	R	R	-	3	3	7
-5	-	-	-	A	A	A/R	R	3	2	5
K-3	A	A	A	A	A	-	-	5	-	5
-4	-	A	A	A/R	R	R	-	3	3	6
-5	-	-	-	-	-	R	R	-	2	2
L-3	-	-	A	A	A	A	A	5	-	5
-4	-	-	-	A	A	A/R	R	3	2	5
-5	-	-	-	-	R	R	R	-	3	3
Total	24	21	24	26	25	23	15	94	63	157

[a]1=10-19 fath; 2=20-29 fath; etc.

Table 4. Inventory of usable hauls by block and depth strata, completed by the R/V G.B. REED, May 24-June 14, 1984. (Unscheduled locations and/or hauls in parentheses.)

Scheduled block-strata	Haul	Scheduled block-strata	Haul	Scheduled block-strata	Haul
A 2 -5	7,11[a]	E 5 -4	32	K 5 -6	63
-6	6	-5	31	-7	UT[b]
-7	5	-6	30		
				L 4 -6	4,70
A 3 -4	8	F 4 (-4)	(47)	-7	2,71
-5	-	-5	36(48)		
-6	10	-6	34	L 5 -5	UT
-7	9	-7	33	-6	UT
				-7	1,72
B 1 -5	15	G 3 -3	45		
-6	14	-4	44		
-7	13	-5	37		
B 2 -5	12	H 3 -2	41		
-6	16	-3	42		
-7	17	-4	43		
B 3 -4	40	H 4 -6	51		
-5	39	-7	49		
-6	38				
		I 4 -4	54		
C 3 (-2)	(21)	-5	67[c]		
-3	20	-6	53		
-4	18	-7	52		
-5	19				
		I 5 -6	57,68[c]		
D 3 -3	22	-7	56		
-4	23				
		(J 4-4)	(66)[c]		
D 4 -3	UT	(-5)	UT		
-4	24	(-6)	UT		
E 3 -2	46	J 5 -6	58		
-3	26	-7	UT		
E 4 -5	27	K 4 -4	60,69		
-6	28	-5	61		
-7	29	-6	62		

[a] Inadvertent replication. Haul 11 should have been in A3-5.

[b] UT = untrawlable.

[c] Side-by-side trawling with F/V ARCTIC OCEAN.

Table 5. Inventory of unoccupied stations, by block and depth strata, during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Block strata	Cause
A 3 - 5	Inadvertently omitted. Block boundary error.
D 4 - 3	Snag. Bad bottom.
J 4 - 5	Sounded. Strata too small.
- 6	Sounded. Strata too small.
J 5 - 7	Aborted haul. Bad bottom.
K 5 - 7	Snag. Bad bottom.
L 5 - 5	Sounded. Bad bottom.
- 6	Sounded. Bad bottom.

Table 6. Calculated numbers of specimens, by species caught, for hauls in which all specimens caught were not enumerated or measured -- G.B. REED Groundfish Cruise 84-3, May 24-June 14, 1984.

Haul no.	Species	Weight (kg) Total	Weight (kg) Sample	Number Sample	Number Total	Sample
6	Arrowtooth flounder	559	367a	458	698	8 tubs
7	Arrowtooth flounder	1707	407a	518	2173	3/3/3b
8	Ratfish	227	95	455	1087	2 tubs
9	Dover sole	726	284	345	882	2/2/2
	Ratfish	345	141	189	462	1/1/1
10	Ratfish	349	153	197	533b	1/1/1
11	Arrowtooth flounder	569	292	478	931	2/2/2
13	Arrowtooth flounder	631	274	329	758	2/2/2
18	English sole	1226	136	797	7185	1/1/1
	Rex sole	195	51a	358	1369	1 tub
40	Ratfish	618	154	417	1673	1/1/1
	Rex sole	154	51a	216	652	1 tub
47	Sablefish	402	133	371	1121	1/1/1
56	Arrowtooth flounder	603	413	426	622	3/3/3
66	Rex sole	159	98	796	1291	1/0/1

[a]Sample weight = mean weight of full tubs multiplied by number of tubs sampled.

[b]First 3, middle 3, last 3.

Table 7. Estimated numbers of ratfish caught for hauls in which specimens with broken tails were discarded, G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Haul no.	Weight (kg) Total	Weight (kg) Sample[a]	Numbers Sample[b]	Numbers Total
1	3	-[c]	8	8
5	161	134	109	131
6	95	88	69	74
7	61	52	41	48
8	227	94(91)[d]	455	1087
9	345	139(141)[d]	189	462
10	349	129(153)[d]	197	533
11	13	-	10	10
12	T[e]	-	1	1
13	111	97	107	122
14	16	-	28	28
15	2	-	10	10
16	5	-	7	7
17	41	42	52	52
18	2	-	7	7
19	31	29	87	87
20	2	-	2	2
22	63	69	76	76
23	10	-	11	11
24	15	15	47	47
26	2	-	2	2
27	108	82	99	130
28	79	84	146	146

[a]Estimated weight of specimens in length-frequency sample.

[b]Numbers of specimens in length-frequency sample.

[c]- = no estimate, too few specimens.

[d]Actual weight in length-frequency. See Table 6.

[e]T = trace = <0.5 kg.

Table 8. Species weighed, but not measured (FL), by haul, during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Species	Haul no.	Weight (kg)	Remarks
Dover + English	11	9 + 22	L-Fs mixed together
Dover sole	24	T[a]	-
English sole	46	T	-
Pacific cod	51	18	-
Pacific sanddab	13	T	-
Rock sole	32	2	-
	49	T	-
Slender sole	33	T	-
Lingcod	9	8	One specimen
Eelpout	33	T	-

aT=trace = <0.5 kg.

Table 9. Inventory of stomachs collected and preserved, by species, during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Species	No. of stomachs
Arrowtooth flounder	148
Dover sole	220
English sole	163
Pacific halibut	53
Rex sole	189
Rock sole	34
Pacific cod	61
Sablefish	11
Walleye pollock	19
Dogfish	140
Ratfish	161
Skate[a]	19
Total	1218

[a]Big, black and longnose skate.

Table 10. Inventory of length-weight data collected for selected species during G.B. REED Groundfish cruise No. 84-3, May 24-June 14, 1984. (See Appendix table 28 for details.)

Species	No. of observations	Size range (cm)
Arrowtooth flounder	378	10-74
English sole	227	15-54
Flathead sole	102	15-39
Pacific sanddab	176	15-34
Rex sole	202	10-44
Slender sole	14	15-19
S. maliger	8	26-40
S. ruberrimus	1	56
Ratfish	290	20-74
Skate--big	3	63-106
--black	6	27-62
--longnose	30	54-161
Total	1437	

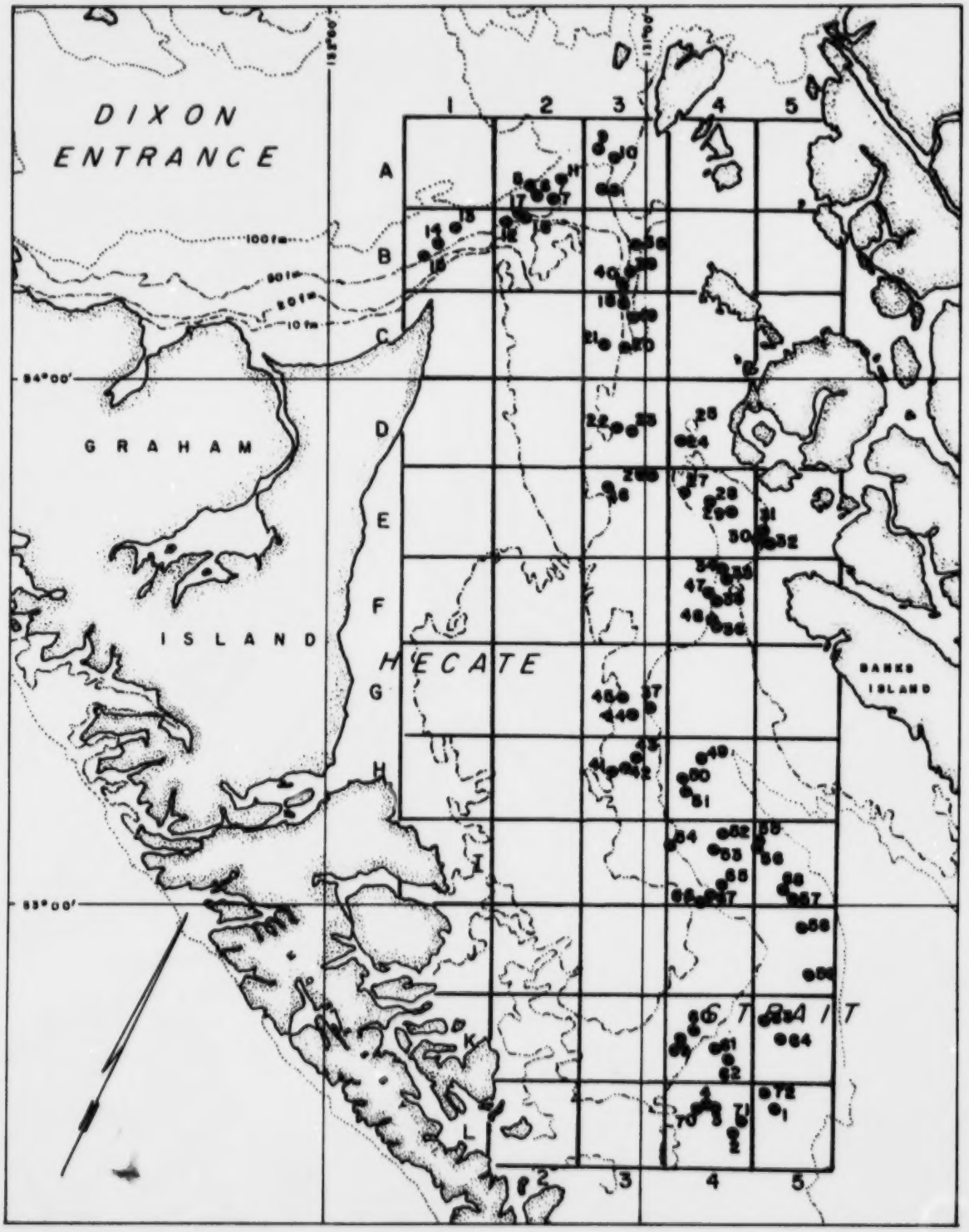

Fig. 1. Chart of Hecate Strait showing sampling grid and locations of trawl hauls completed during G. B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

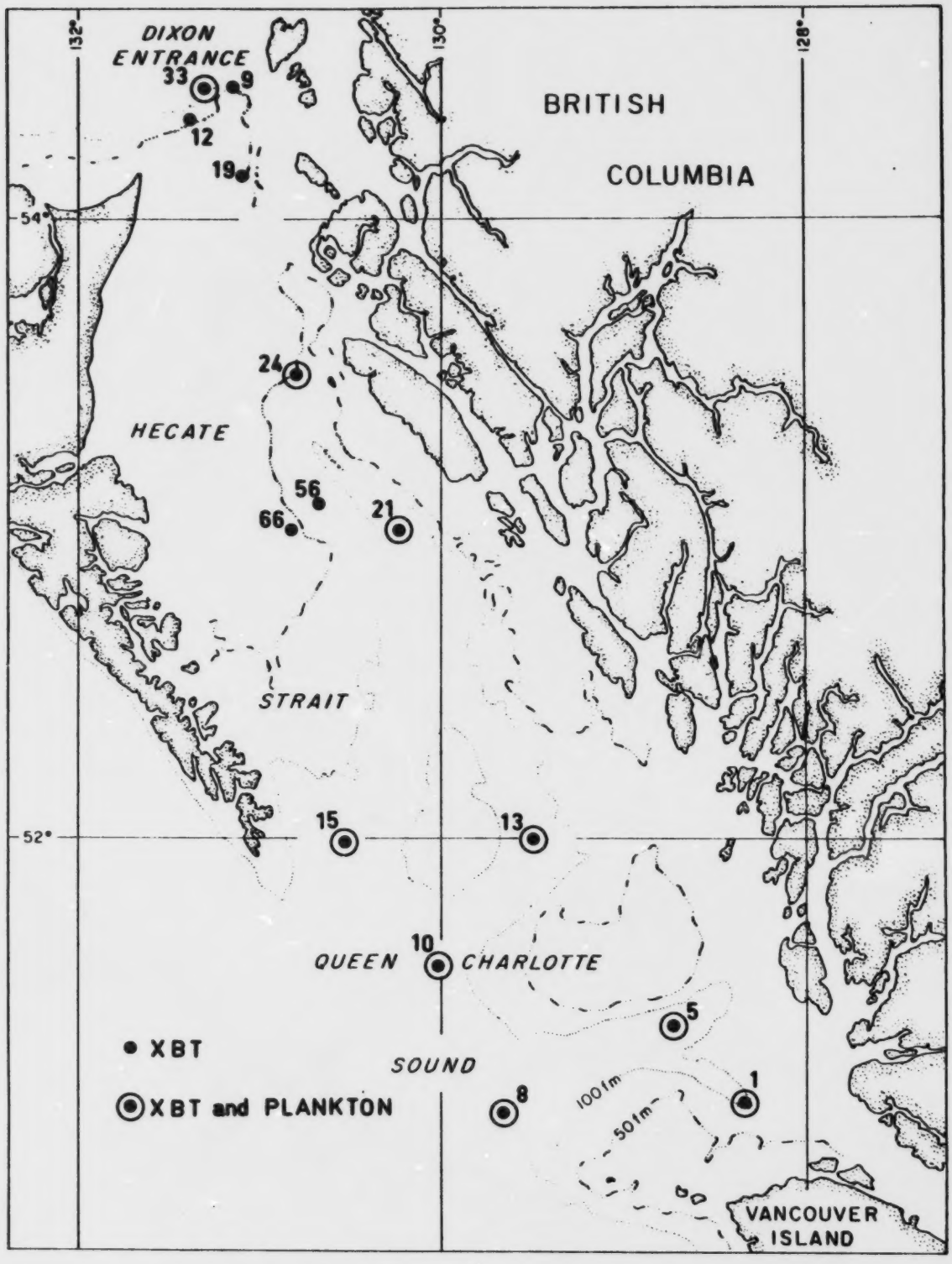

Fig. 2. Chart of Queen Charlotte Sound and Hecate Strait showing locations of XBT and plankton stations occupied during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	1		2	
BLOCK	L507		L407	
DATE (1984)	MAY 25		MAY 25	
DEPTH INTERVAL (FA)	70		70	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	0		22	
	START	STOP	START	STOP
TIME (PDT)	11:12	11:32	14:22	14:42
LAT.(DEG,MIN)	52 38.2	52 39.1	52 33.5	52 34.3
LONG.(DEG,MIN)	130 37.7	130 37.7	130 42	130 41.7
LC-5990-X	12495	12488	12507.4	12503.7
LC-5990-Z	41436	41438	41413.4	41416.7
DEPTH (FA)	76	77	71	71
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	8		TRACE	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		-	
ENGLISH SOLE	2		3	
FLATHEAD SOLE	1		-	
PACIFIC HALIBUT	-		2	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		40	
REX SOLE	3		3	
ROCK SOLE	-		-	
SLENDER SOLE	-		-	
S. ALUTUS	-		TRACE	
S. BABCOCKI	-		-	
S. BREVISPINIS	78		16	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		22	
S. PINNIGER	7		2	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		TRACE	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		-	
LINGCOD	7		7	
PACIFIC COD	5		-	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	TRACE		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	3		-	
BIG SKATE	2		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	30		97	
INVERTEBRATES	2		-	
TOTAL CATCH (KG.)	148		193	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	3		4	
BLOCK	L406		L406	
DATE (1984)	MAY 25		MAY 25	
DEPTH INTERVAL (FA)	60		60	
DURATION (H)	0.00		0.33	
DIRECTION (DEG. TRUE)	0		205	
	START	STOP	START	STOP
TIME (PDT)	16:13	16:13	18:01	18:21
LAT.(DEG,MIN)	52 36.9	52 36.9	52 37	52 36.1
LONG.(DEG,MIN)	130 47.4	130 47.4	130 47.8	130 48.6
LC-5990-X	12462.9	12462.9	12460.4	12463.8
LC-5990-Z	41420.6	41420.6	41420.9	41416.6
DEPTH (FA)	66	66	64	64
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	-		TRACE	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	-		-	
ENGLISH SOLE	-		3	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	-		17	
PACIFIC SANDDAB	-		5	
PETRALE SOLE	-		12	
REX SOLE	-		TRACE	
ROCK SOLE	-		3	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		TRACE	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		TRACE	
LINGCOD	-		-	
PACIFIC COD	-		-	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	-		-	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	-		151	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	0		191	
REMARKS	UNUSABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. NEED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	5		6	
BLOCK	A207		A206	
DATE (1984)	MAY 26		MAY 26	
DEPTH INTERVAL (FA)	70		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	199		188	
	START	STOP	START	STOP
TIME (PDT)	11:19	11:39	12:54	13:14
LAT. (DEG,MIN)	54 22.5	54 21.5	54 21.8	54 21
LONG. (DEG,MIN)	131 17.4	131 18	131 16.7	131 17.2
LC-5990-X	11555	11562	11562	11568
LC-5990-Z	41741	41737	41740	41737
DEPTH (FA)	72	74	63	65
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	252		559	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		5	
ENGLISH SOLE	TRACE		-	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	7		23	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		-	
REX SOLE	TRACE		TRACE	
ROCK SOLE	-		2	
SLENDER SOLE	-		-	
S. ALUTUS	4		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		3	
S. FLAVIDUS	-		2	
S. MALIGER	-		-	
S. PAUCISPINIS	9		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		-	
PACIFIC COD	1		5	
PACIFIC TOMCOD	-		-	
POACHERS	TRACE		-	
SABLEFISH	-		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	12		5	
RATFISH	161		95	
BIG SKATE	6		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	76		80	
INVERTEBRATES	TRACE		TRACE	
TOTAL CATCH (KG.)	528		779	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	7		8	
BLOCK	A205		A304	
DATE (1984)	MAY 26		MAY 26	
DEPTH INTERVAL (FA)	50		40	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	192		149	
	START	STOP	START	STOP
TIME (PDT)	14:47	15:07	17:21	17:41
LAT. (DEG,MIN)	54 21.3	54 20.3	54 22.3	54 21.5
LONG. (DEG,MIN)	131 16.2	131 16.5	131 08.5	131 07.7
LC-5990-X	11569	11577	11587.8	11597.7
LC-5990-Z	41741	41737	41753.4	41752
DEPTH (FA)	57	58	45	48
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	1707		130	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	20		240	
ENGLISH SOLE	38		235	
FLATHEAD SOLE	-		14	
PACIFIC HALIBUT	51		-	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		2	
REX SOLE	8		30	
ROCK SOLE	-		2	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	2		-	
S. FLAVIDUS	-		35	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	4		2	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		24	
PACIFIC COD	19		4	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	1		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	2		1	
RATFISH	61		227	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	46		32	
INVERTEBRATES	-		TRACE	
TOTAL CATCH (KG.)	1959		979	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	9		10	
BLOCK	A307		A306	
DATE (1984)	MAY 27		MAY 27	
DEPTH INTERVAL (FA)	70		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	75		132	
	START	STOP	START	STOP
TIME (PDT)	8:25	8:45	11:08	11:28
LAT. (DEG,MIN)	54 25.7	54 26	54 24.9	54 24.3
LONG. (DEG,MIN)	131 10.6	131 09	131 08.2	131 07.1
LC-5990-X	11552	11554	11564	11573
LC-5990-Z	41760	41763	41762	41761.5
DEPTH (FA)	72	72	64	64
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	303		90	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	726		173	
ENGLISH SOLE	3		9	
FLATHEAD SOLE	1		7	
PACIFIC HALIBUT	-		1	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		-	
REX SOLE	22		27	
ROCK SOLE	1		2	
SLENDER SOLE	-		-	
S. ALUTUS	-		1	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	TRACE		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		-	
LINGCOD	8		2	
PACIFIC COD	19		9	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	1		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	6		1	
RATFISH	345		349	
BIG SKATE	9		7	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	23		15	
INVERTEBRATES	TRACE		-	
TOTAL CATCH (KG.)	1467		693	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	11		12	
BLOCK	A205		B205	
DATE (1984)	MAY 27		MAY 27	
DEPTH INTERVAL (FA)	50		50	
DURATION (H)	1.33		0.33	
DIRECTION (DEG. TRUE)	47		80	
	START	STOP	START	STOP
TIME (PDT)	14:33	14:53	17:25	17:45
LAT. (DEG,MIN)	54 23.1	54 23.8	54 18	54 18.2
LONG. (DEG,MIN)	131 14.9	131 13.7	131 26.4	131 24.6
LC-5990-X	11559	11557	11563.7	11567.4
LC-5990-Z	41747	41750	41716.4	41719.3
DEPTH (FA)	54	53	58	56
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	569		101	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	9		24	
ENGLISH SOLE	22		3	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	54		22	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		-	
REX SOLE	3		21	
ROCK SOLE	-		-	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	2		-	
S. FLAVIDUS	-		TRACE	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	1		-	
LINGCOD	-		-	
PACIFIC COD	8		6	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	2		2	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	2		11	
RATFISH	13		TRACE	
BIG SKATE	4		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	224		15	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	913		205	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	13		14	
BLOCK	B107		B106	
DATE (1984)	MAY 28		MAY 28	
DEPTH INTERVAL (FA)	70		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	233		244	
	START	STOP	START	STOP
TIME (PDT)	13:00	13:20	14:36	14:56
LAT.(DEG,MIN)	54 15.5	54 15.1	54 14	54 13.5
LONG.(DEG,MIN)	131 40.9	131 42.1	131 42.5	131 44.1
LC-5990-X	11542	11542	11550	11550
LC-5990-Z	41691	41688	41684	41681
DEPTH (FA)	72	72	65	65
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	631		222	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	56		69	
ENGLISH SOLE	2		43	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	1		5	
PACIFIC SANDDAB	TRACE		-	
PETRALE SOLE	1		-	
REX SOLE	6		10	
ROCK SOLE	-		-	
SLENDER SOLE	-		-	
S. ALUTUS	16		3	
S. BABCOCKI	-		-	
S. BREVISPINIS	12		11	
S. FLAVIDUS	5		10	
S. MALIGER	-		-	
S. PAUCISPINIS	5		732	
S. PINNIGER	-		256	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	7		12	
PACIFIC COD	-		7	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	5		2	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	34		25	
RATFISH	111		16	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	56		39	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	948		1462	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	15		16	
BLOCK	B105		B206	
DATE (1984)	MAY 28		MAY 29	
DEPTH INTERVAL (FA)	50		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	235		265	
	START	STOP	START	STOP
TIME (PDT)	18:35	18:55	9:03	9:23
LAT.(DEG,MIN)	54 12.8	54 12.2	54 18.4	54 18.4
LONG.(DEG,MIN)	131 43.3	131 44.7	131 23.8	131 25.1
LC-5990-X	11556.9	11558.2	11568	11564
LC-5990-Z	41680	41676.4	41721	41718
DEPTH (FA)	50	47	58	61
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	231		45	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	38		22	
ENGLISH SOLE	31		TRACE	
FLATHEAD SOLE	TRACE		-	
PACIFIC HALIBUT	20		28	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	1		-	
REX SOLE	19		9	
ROCK SOLE	-		-	
SLENDER SOLE	-		-	
S. ALUTUS	-		TRACE	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		1	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		TRACE	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	7		4	
PACIFIC COD	7		26	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	4		6	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	9		4	
RATFISH	2		5	
BIG SKATE	-		-	
BLACK SKATE	-		4	
LONGNOSE SKATE	-		31	
SPINY DOGFISH	143		126	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	512		311	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	17		18	
BLOCK	B207		C304	
DATE (1984)	MAY 29		MAY 29	
DEPTH INTERVAL (FA)	70		40	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	270		358	
	START	STOP	START	STOP
TIME (PDT)	12:17	12:37	15:41	16:01
LAT.(DEG,MIN)	54 18.6	54 18.6	54 08.4	54 09.5
LONG.(DEG,MIN)	131 24.8	131 26.4	131 04.8	131 04.9
LC-5990-X	11566	11558	11716	11707.3
LC-5990-Z	41721	41717.5	41716	41719.2
DEPTH (FA)	70	75	41	45
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	74		83	
BUTTER SOLE	-		1	
CURLFIN SOLE	-		-	
DOVER SOLE	156		32	
ENGLISH SOLE	4		1226	
FLATHEAD SOLE	-		7	
PACIFIC HALIBUT	2		30	
PACIFIC SANDDAB	-		TRACE	
PETRALE SOLE	-		-	
REX SOLE	5		195	
ROCK SOLE	-		12	
SLENDER SOLE	-		-	
S. ALUTUS	2		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		TRACE	
PACIFIC COD	14		7	
PACIFIC TOMCOD	-		2	
POACHERS	-		1	
SABLEFISH	3		6	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	3		5	
RATFISH	41		2	
BIG SKATE	1		-	
BLACK SKATE	4		-	
LONGNOSE SKATE	3		56	
SPINY DOGFISH	63		78	
INVERTEBRATES	-		2	
TOTAL CATCH (KG.)	374		1745	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	19		20	
BLOCK	C305		C303	
DATE (1984)	MAY 30		MAY 30	
DEPTH INTERVAL (FA)	50		30	
DURATION (H)	0.32		0.33	
DIRECTION (DEG. TRUE)	169		208	
	START	STOP	START	STOP
TIME (PDT)	8:34	8:53	13:27	13:47
LAT. (DEG,MIN)	54 07.4	54 06.6	54 02.9	54 02
LONG. (DEG,MIN)	131 03.6	131 03.5	131 04.8	131 05.3
LC-5990-X	11729	11735	11761	11765
LC-5990-Z	41715	41712.5	41698	41695
DEPTH (FA)	54	50	40	26
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	165		29	
BUTTER SOLE	-		4	
CURLFIN SOLE	-		-	
DOVER SOLE	99		3	
ENGLISH SOLE	102		132	
FLATHEAD SOLE	6		2	
PACIFIC HALIBUT	34		28	
PACIFIC SANDDAB	-		5	
PETRALE SOLE	-		-	
REX SOLE	110		66	
ROCK SOLE	2		8	
SLENDER SOLE	-		-	
S. ALUTUS	TRACE		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		2	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		5	
PACIFIC COD	51		15	
PACIFIC TOMCOD	-		1	
POACHERS	-		TRACE	
SABLEFISH	2		6	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	9		6	
RATFISH	31		2	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	1		14	
SPINY DOGFISH	16		52	
INVERTEBRATES	1		-	
TOTAL CATCH (KG.)	629		385	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REF Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	21		22	
BLOCK	C302		D303	
DATE (1984)	MAY 30		MAY 30	
DEPTH INTERVAL (FA)	20		30	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	197		155	
	START	STOP	START	STOP
TIME (PDT)	15:00	15:20	18:16	18:36
LAT. (DEG,MIN)	54 03	54 02.2	53 54.2	53 53.2
LONG. (DEG,MIN)	131 08.4	131 08.8	131 04.2	131 03.5
LC-5990-X	11746	11751	11833.3	11844.1
LC-5990-Z	41694	41691	41671.8	41669.5
DEPTH (FA)	23	21	31	32
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	-		-	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		3	
DOVER SOLE	-		1	
ENGLISH SOLE	-		59	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	26		50	
PACIFIC SANDDAB	-		11	
PETRALE SOLE	-		TRACE	
REX SOLE	-		TRACE	
ROCK SOLE	25		72	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		1	
S. MALIGER	-		3	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		TRACE	
PACIFIC COD	3		6	
PACIFIC TOMCOD	-		-	
POACHERS	TRACE		-	
SABLEFISH	-		3	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	-		63	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	10		-	
SPINY DOGFISH	71		24	
INVERTEBRATES	1		-	
TOTAL CATCH (KG.)	136		296	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	23		24	
BLOCK	D304		D404	
DATE (1984)	MAY 31		MAY 31	
DEPTH INTERVAL (FA)	40		40	
DURATION (H)	0.33		0.32	
DIRECTION (DEG. TRUE)	144		129	
	START	STOP	START	STOP
TIME (PDT)	8:55	9:15	10:41	11:00
LAT. (DEG,MIN)	53 54	53 53.3	53 53.1	53 52.6
LONG. (DEG,MIN)	131 01.3	131 00	130 54.2	130 53.1
LC-5990-X	11845.3	11854.9	11880.5	11888.7
LC-5990-Z	41675.3	41673.8	41682	41682
DEPTH (FA)	40	40	42	44
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	4		1	
BUTTER SOLE	1		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		TRACE	
ENGLISH SOLE	34		36	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	31		44	
PACIFIC SANDDAB	32		1	
PETRALE SOLE	-		2	
REX SOLE	1		TRACE	
ROCK SOLE	5		39	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	TRACE		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		-	
LINGCOD	-		5	
PACIFIC COD	5		1	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	43		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	TRACE		-	
WALLEYE POLLOCK	-		-	
RATFISH	10		15	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	9		3	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	175		148	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	25		26	
BLOCK	D403		E303	
DATE (1984)	MAY 31		MAY 31	
DEPTH INTERVAL (FA)	30		30	
DURATION (H)	0.08		0.33	
DIRECTION (DEG. TRUE)	130		150	
	START	STOP	START	STOP
TIME (PDT)	12:30	12:35	14:41	15:01
LAT. (DEG,MIN)	53 54.4	53 54.3	53 49.4	53 48.6
LONG. (DEG,MIN)	130 52.8	130 52.6	130 59.9	130 59.3
LC-5990-X	11876	11878	11887	11896
LC-5990-Z	41688	41688	41662	41661
DEPTH (FA)	33	30	35	32
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	-		-	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		TRACE	
DOVER SOLE	-		-	
ENGLISH SOLE	-		-	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	-		100	
PACIFIC SANDDAB	-		TRACE	
PETRALE SOLE	-		-	
REX SOLE	-		-	
ROCK SOLE	1		48	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	8		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	2		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	3		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		-	
PACIFIC COD	-		1	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		TRACE	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		TRACE	
WALLEYE POLLOCK	-		-	
RATFISH	61		2	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	-		306	
INVERTEBRATES	TRACE		37	
TOTAL CATCH (KG.)	75		494	
REMARKS	UNUSABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	27		28	
BLOCK	E405		E406	
DATE (1984)	JUNE 01		JUNE 01	
DEPTH INTERVAL (FA)	50		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	169		168	
	START	STOP	START	STOP
TIME (PDT)	12:10	12:30	13:38	13:58
LAT. (DEG,MIN)	53 47.2	53 46.2	53 46	53 45.4
LONG. (DEG,MIN)	130 52.7	130 52.3	130 48.9	130 48.8
LC-5990-X	11933	11943	11957	11964
LC-5990-Z	41665	41662	41666	41664
DEPTH (FA)	54	54	65	64
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	3		18	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	6		14	
ENGLISH SOLE	82		73	
FLATHEAD SOLE	9		13	
PACIFIC HALIBUT	13		5	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	4		TRACE	
REX SOLE	22		19	
ROCK SOLE	TRACE		-	
SLENDER SOLE	TRACE		TRACE	
S. ALUTUS	5		2	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		TRACE	
PACIFIC COD	1		11	
PACIFIC TOMCOD	-		-	
POACHERS	TRACE		-	
SABLEFISH	7		2	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	3		2	
RATFISH	108		79	
BIG SKATE	-		-	
BLACK SKATE	1		-	
LONGNOSE SKATE	-		4	
SPINY DOGFISH	210		99	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	474		341	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	29		30	
BLOCK	E407		E506	
DATE (1984)	JUNE 01		JUNE 01	
DEPTH INTERVAL (FA)	70		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	175		192	
	START	STOP	START	STOP
TIME (PDT)	15:10	15:30	17:37	17:57
LAT. (DEG,MIN)	53 45.3	53 44.5	53 43.3	53 42.4
LONG. (DEG,MIN)	130 46.5	130 46.4	130 39	130 39.2
LC-5990-X	11973	11980	12020.2	12026.1
LC-5990-Z	41667	41664	41670.9	41667.6
DEPTH (FA)	75	73	64	64
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	258		TRACE	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	104		2	
ENGLISH SOLE	50		25	
FLATHEAD SOLE	5		1	
PACIFIC HALIBUT	-		14	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		-	
REX SOLE	29		9	
ROCK SOLE	-		-	
SLENDER SOLE	1		2	
S. ALUTUS	1		TRACE	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		1	
S. FLAVIDUS	-		1	
S. MALIGER	-		-	
S. PAUCISPINIS	8		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	TRACE		TRACE	
GREENLINGS,	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		-	
PACIFIC COD	9		7	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	6		TRACE	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	40		1	
RATFISH	90		6	
BIG SKATE	-		-	
BLACK SKATE	1		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	90		19	
INVERTEBRATES	-		TRACE	
TOTAL CATCH (KG.)	692		88	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	31		32	
BLOCK	E505		E504	
DATE (1984)	JUNE 02		JUNE 02	
DEPTH INTERVAL (FA)	50		40	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	199		210	
	START	STOP	START	STOP
TIME (PDT)	8:30	8:50	9:32	9:52
LAT. (DEG,MIN)	53 43.3	53 42.1	53 42.7	53 41.9
LONG. (DEG,MIN)	130 37.6	130 38.2	130 36.7	130 37.3
LC-5990-X	12024	12030.5	12034	12038
LC-5990-Z	41673	41669	41673	41669
DEPTH (FA)	56	55	43	46
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	3		-	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		2	
ENGLISH SOLE	16		84	
FLATHEAD SOLE	1		1	
PACIFIC HALIBUT	3		7	
PACIFIC SANDDAB	TRACE		22	
PETRALE SOLE	-		1	
REX SOLE	16		5	
ROCK SOLE	TRACE		2	
SLENDER SOLE	1		TRACE	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	TRACE		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		1	
PACIFIC COD	1		TRACE	
PACIFIC TOMCOD	-		TRACE	
POACHERS	TRACE		-	
SABLEFISH	4		3	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		TRACE	
WALLEYE POLLOCK	TRACE		-	
RATFISH	5		1	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	15		10	
INVERTEBRATES	-		TRACE	
TOTAL CATCH (KG.)	65		139	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	33		34	
BLOCK	F407		F406	
DATE (1984)	JUNE 02		JUNE 02	
DEPTH INTERVAL (FA)	70		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	25		26	
	START	STOP	START	STOP
TIME (PDT)	12:25	12:45	14:22	14:42
LAT. (DEG,MIN)	53 37.8	53 38.8	53 38.7	53 39.6
LONG. (DEG,MIN)	130 46.3	130 45.1	130 46.3	130 45.7
LC-5990-X	12033	12030	12024	12020
LC-5990-Z	41642	41647	41645	41648
DEPTH (FA)	73	74	63	65
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	416		18	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	24		4	
ENGLISH SOLE	94		82	
FLATHEAD SOLE	TRACE		-	
PACIFIC HALIBUT	7		6	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		-	
REX SOLE	33		100	
ROCK SOLE	-		TRACE	
SLENDER SOLE	TRACE		-	
S. ALUTUS	11		4	
S. BABCOCKI	-		-	
S. BREVISPINIS	1		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	7		19	
S. PINNIGER	1		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	TRACE		TRACE	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		-	
PACIFIC COD	22		14	
PACIFIC TOMCOD	-		-	
POACHERS	-		TRACE	
SABLEFISH	1		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	93		72	
RATFISH	42		9	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	216		80	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	968		409	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	35		36	
BLOCK	F405		F405	
DATE (1984)	JUNE 02		JUNE 02	
DEPTH INTERVAL (FA)	50		50	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	24		1	
	START	STOP	START	STOP
TIME (PDT)	15:49	16:09	17:55	18:15
LAT.(DEG,MIN)	53 34.6	53 35.7	53 32.3	53 33.1
LONG.(DEG,MIN)	130 46.7	130 45.8	130 47.8	130 47.7
LC-5990-X	12056	12050	12067.8	12062.2
LC-5990-Z	41630	41635.5	41620.9	41623.6
DEPTH (FA)	55	62	56	56
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	72		18	
BUTTER SOLE	TRACE		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		TRACE	
ENGLISH SOLE	12		35	
FLATHEAD SOLE	TRACE		-	
PACIFIC HALIBUT	2		4	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	1		-	
REX SOLE	25		19	
ROCK SOLE	TRACE		TRACE	
SLENDER SOLE	-		-	
S. ALUTUS	2		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	55		8	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		TRACE	
GREENLINGS	-		-	
PACIFIC HAKE	1		-	
PACIFIC HERRING	-		-	
LINGCOD	-		2	
PACIFIC COD	114		15	
PACIFIC TOMCOD	-		-	
POACHERS	TRACE		TRACE	
SABLEFISH	-		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	67		9	
RATFISH	30		10	
BIG SKATE	-		-	
BLACK SKATE	-		TRACE	
LONGNOSE SKATE	-		4	
SPINY DOGFISH	27		-	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	408		125	
REMARKS	UNUSABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	37		38	
BLOCK	G305		B306	
DATE (1984)	JUNE 03		JUNE 04	
DEPTH INTERVAL (FA)	50		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	12		356	
	START	STOP	START	STOP
TIME (PDT)	8:33	8:53	10:30	10:50
LAT. (DEG,MIN)	53 23.2	53 24	54 14.1	54 15.3
LONG. (DEG,MIN)	130 58.7	130 58.5	131 02.2	131 02.6
LC-5990-X	12093.1	12087.5	11678.9	11667.5
LC-5990-Z	41575.1	41578.2	41737	41740.3
DEPTH (FA)	54	52	66	64
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	TRACE		26	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		122	
ENGLISH SOLE	27		5	
FLATHEAD SOLE	TRACE		-	
PACIFIC HALIBUT	-		43	
PACIFIC SANDDAB	59		1	
PETRALE SOLE	1		-	
REX SOLE	8		1	
ROCK SOLE	-		6	
SLENDER SOLE	-		-	
S. ALUTUS	TRACE		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		1	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		-	
LINGCOD	14		40	
PACIFIC COD	18		2	
PACIFIC TOMCOD	-		-	
POACHERS	TRACE		-	
SABLEFISH	1		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	TRACE		-	
RATFISH	-		181	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	79		6	
INVERTEBRATES	TRACE		-	
TOTAL CATCH (KG.)	207		435	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	39		40	
BLOCK	B305		B304	
DATE (1984)	JUNE 04		JUNE 04	
DEPTH INTERVAL (FA)	50		40	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	0		2	
	START	STOP	START	STOP
TIME (PDT)	13:55	14:15	15:11	15:31
LAT.(DEG,MIN)	54 12.1	54 13	54 11.3	54 12.1
LONG.(DEG,MIN)	131 03.6	131 03.5	131 04.6	131 04.5
LC-5990-X	11690	11683	11693	11686
LC-5990-Z	41729	41732	41725	41728
DEPTH (FA)	55	54	45	45
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	49		37	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	68		67	
ENGLISH SOLE	9		22	
FLATHEAD SOLE	1		8	
PACIFIC HALIBUT	29		21	
PACIFIC SANDDAB	-		TRACE	
PETRALE SOLE	-		-	
REX SOLE	97		154	
ROCK SOLE	2		19	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	4		27	
PACIFIC COD	-		19	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	1		TRACE	
RATFISH	149		618	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	21		21	
SPINY DOGFISH	18		31	
INVERTEBRATES	-		19	
TOTAL CATCH (KG.)	448		1064	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	41		42	
BLOCK	H302		H303	
DATE (1984)	JUNE 05		JUNE 05	
DEPTH INTERVAL (FA)	20		30	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	160		143	
	START	STOP	START	STOP
TIME (PDT)	8:27	8:47	9:42	10:02
LAT.(DEG,MIN)	53 15.1	53 14.3	53 15.3	53 14.5
LONG.(DEG,MIN)	131 04.7	131 04.3	131 03.3	131 02.4
LC-5990-X	12128.8	12136.9	12133	12142.6
LC-5990-Z	41540.2	41537.2	41542.1	41540.4
DEPTH (FA)	25	24	34	35
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	-		-	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		1	
DOVER SOLE	-		-	
ENGLISH SOLE	TRACE		TRACE	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	46		29	
PACIFIC SANDDAB	TRACE		1	
PETRALE SOLE	-		-	
REX SOLE	-		-	
ROCK SOLE	24		1	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	46		28	
PACIFIC COD	-		-	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	TRACE		TRACE	
WALLEYE POLLOCK	-		-	
RATFISH	-		-	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	54		-	
SPINY DOGFISH	35		37	
INVERTEBRATES	3		TRACE	
TOTAL CATCH (KG.)	208		97	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	43		44	
BLOCK	H304		G304	
DATE (1984)	JUNE 05		JUNE 05	
DEPTH INTERVAL (FA)	40		40	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	180		15	
	START	STOP	START	STOP
TIME (PDT)	10:48	11:08	12:23	12:43
LAT. (DEG,MIN)	53 15.9	53 14.8	53 22.4	53 23.6
LONG. (DEG,MIN)	131 00.6	131 00.2	131 00.9	131 00.5
LC-5990-X	12139.3	12148.6	12089	12083
LC-5990-Z	41547.4	41544.1	41570	41574
DEPTH (FA)	43	42	45	45
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	-		TRACE	
BUTTER SOLE	-		-	
CURLFIN SOLE	TRACE		-	
DOVER SOLE	TRACE		TRACE	
ENGLISH SOLE	36		2	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	93		7	
PACIFIC SANDDAB	7		9	
PETRALE SOLE	TRACE		TRACE	
REX SOLE	TRACE		1	
ROCK SOLE	4		TRACE	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		TRACE	
LINGCOD	16		-	
PACIFIC COD	10		TRACE	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		-	
SANDLANCE	TRACE		-	
SCULPINS	-		-	
SHINER PERCH	TRACE		1	
WALLEYE POLLOCK	-		-	
RATFISH	1		-	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	69		36	
INVERTEBRATES	15		TRACE	
TOTAL CATCH (KG.)	251		56	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	45		46	
BLOCK	G303		E302	
DATE (1984)	JUNE 05		JUNE 05	
DEPTH INTERVAL (FA)	30		20	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	173		169	
	START	STOP	START	STOP
TIME (PDT)	13:22	13:42	18:20	18:40
LAT. (DEG,MIN)	53 23.9	53 22.9	53 47.6	53 46.6
LONG. (DEG,MIN)	131 02.5	131 02.4	131 07.3	131 07.1
LC-5990-X	12073	12080	11873.9	11882.3
LC-5990-Z	41573	41570	41646.3	41643.3
DEPTH (FA)	31	30	27	25
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	-		-	
BUTTER SOLE	TRACE		-	
CURLFIN SOLE	-		TRACE	
DOVER SOLE	-		-	
ENGLISH SOLE	-		TRACE	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	20		15	
PACIFIC SANDDAB	TRACE		TRACE	
PETRALE SOLE	-		-	
REX SOLE	-		-	
ROCK SOLE	11		28	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	39		1	
PACIFIC COD	-		-	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		-	
SANDLANCE	TRACE		-	
SCULPINS	-		TRACE	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	-		-	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	77		10	
SPINY DOGFISH	52		416	
INVERTEBRATES	TRACE		10	
TOTAL CATCH (KG.)	199		480	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	47		48	
BLOCK	F404		F405	
DATE (1984)	JUNE 06		JUNE 06	
DEPTH INTERVAL (FA)	40		50	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	215		191	
	START	STOP	START	STOP
TIME (PDT)	9:53	10:13	12:57	13:17
LAT. (DEG,MIN)	53 35.7	53 34.7	53 32.8	53 31.8
LONG. (DEG,MIN)	130 47.7	130 48.6	130 47.9	130 48.1
LC-5990-X	12041.7	12046.1	12064	12071
LC-5990-Z	41632.8	41628	41622	41619
DEPTH (FA)	49	45	53	54
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	3		6	
BUTTER SOLE	TRACE		-	
CURLFIN SOLE	-		TRACE	
DOVER SOLE	TRACE		4	
ENGLISH SOLE	72		66	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	192		109	
PACIFIC SANDDAB	28		TRACE	
PETRALE SOLE	9		10	
REX SOLE	1		16	
ROCK SOLE	2		1	
SLENDER SOLE	-		-	
S. ALUTUS	-		TRACE	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		3	
PACIFIC COD	83		16	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	402		28	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		6	
RATFISH	14		2	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	-		104	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	806		371	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	49		50	
BLOCK	H407		H406	
DATE (1984)	JUNE 06		JUNE 06	
DEPTH INTERVAL (FA)	70		60	
DURATION (H)	0.22		0.17	
DIRECTION (DEG. TRUE)	339		355	
	START	STOP	START	STOP
TIME (PDT)	15:55	16:08	18:00	18:10
LAT. (DEG,MIN)	53 16	53 16.7	53 14.3	53 14.9
LONG. (DEG,MIN)	130 51	130 51.4	130 52.8	130 52.7
LC-5990-X	12177.1	12170.2	12181.5	12177.5
LC-5990-Z	41559.3	41561.4	41551.1	41553.6
DEPTH (FA)	74	73	64	65
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	199		3	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	22		-	
ENGLISH SOLE	6		3	
FLATHEAD SOLE	7		2	
PACIFIC HALIBUT	-		-	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	1		-	
REX SOLE	14		-	
ROCK SOLE	TRACE		-	
SLENDER SOLE	-		-	
S. ALUTUS	4		-	
S. BABCOCKI	2		-	
S. BREVISPINIS	11		-	
S. FLAVIDUS	TRACE		-	
S. MALIGER	-		-	
S. PAUCISPINIS	4		-	
S. PINNIGER	10		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	TRACE		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		-	
PACIFIC COD	16		12	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	3		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	4		-	
RATFISH	18		3	
BIG SKATE	-		-	
BLACK SKATE	1		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	92		9	
INVERTEBRATES	-		5	
TOTAL CATCH (KG.)	414		37	
REMARKS	USABLE		UNUSABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	51		52	
BLOCK	H406		I407	
DATE (1984)	JUNE 07		JUNE 07	
DEPTH INTERVAL (FA)	60		70	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	153		158	
	START	STOP	START	STOP
TIME (PDT)	9:03	9:23	11:03	11:23
LAT. (DEG,MIN)	53 13.4	53 12.7	53 08.4	53 07.6
LONG. (DEG,MIN)	130 52.9	130 52.3	130 44.7	130 44.1
LC-5990-X	12188.3	12195	12257.7	12265.8
LC-5990-Z	41547.7	41546.3	41539.9	41537.6
DEPTH (FA)	64	65	76	74
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	TRACE		53	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		1	
ENGLISH SOLE	16		11	
FLATHEAD SOLE	TRACE		3	
PACIFIC HALIBUT	5		-	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		3	
REX SOLE	5		8	
ROCK SOLE	-		-	
SLENDER SOLE	TRACE		TRACE	
S. ALUTUS	TRACE		27	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	TRACE		-	
EULACHON	3		3	
GREENLINGS	-		-	
PACIFIC HAKE	TRACE		TRACE	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		6	
PACIFIC COD	18		4	
PACIFIC TOMCOD	-		-	
POACHERS	TRACE		-	
SABLEFISH	-		7	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		TRACE	
RATFISH	10		2	
BIG SKATE	-		-	
BLACK SKATE	TRACE		-	
LONGNOSE SKATE	1		-	
SPINY DOGFISH	12		38	
INVERTEBRATES	TRACE		TRACE	
TOTAL CATCH (KG.)	70		166	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	53		54	
BLOCK	I406		I404	
DATE (1984)	JUNE 07		JUNE 07	
DEPTH INTERVAL (FA)	60		40	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	146		120	
	START	STOP	START	STOP
TIME (PDT)	12:37	12:57	14:28	14:48
LAT. (DEG,MIN)	53 05.2	53 04.3	53 06.4	53 05.8
LONG. (DEG,MIN)	130 46.6	130 46	130 54.9	130 53.5
LC-5990-X	12273	12282	12230	12240
LC-5990-Z	41526	41523	41520	41520
DEPTH (FA)	67	66	43	45
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	3		TRACE	
BUTTER SOLE	-		TRACE	
CURLFIN SOLE	-		-	
DOVER SOLE	1		-	
ENGLISH SOLE	6		227	
FLATHEAD SOLE	5		-	
PACIFIC HALIBUT	2		40	
PACIFIC SANDDAB	-		131	
PETRALE SOLE	1		1	
REX SOLE	18		1	
ROCK SOLE	-		1	
SLENDER SOLE	TRACE		TRACE	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	TRACE		-	
EULACHON	TRACE		-	
GREENLINGS	-		-	
PACIFIC HAKE	TRACE		-	
PACIFIC HERRING	-		-	
LINGCOD	-		6	
PACIFIC COD	-		-	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	2		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	3		-	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	24		85	
INVERTEBRATES	TRACE		TRACE	
TOTAL CATCH (KG.)	65		493	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	55		56	
BLOCK	I507		I507	
DATE (1984)	JUNE 07		JUNE 08	
DEPTH INTERVAL (FA)	80		70	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	121		115	
	START	STOP	START	STOP
TIME (PDT)	17:54	18:14	8:54	9:14
LAT. (DEG,MIN)	53 06.3	53 05.9	53 05.8	53 05.3
LONG. (DEG,MIN)	130 39.4	130 38.7	130 40.2	130 38.9
LC-5990-X	12294.6	12300.3	12297.5	12306
LC-5990-Z	41538.7	41538.3	41537.8	41537.9
DEPTH (FA)	79	80	79	76
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	173		603	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	33		11	
ENGLISH SOLE	-		17	
FLATHEAD SOLE	8		2	
PACIFIC HALIBUT	-		10	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	-		10	
REX SOLE	55		35	
ROCK SOLE	-		-	
SLENDER SOLE	TRACE		-	
S. ALUTUS	60		25	
S. BABCOCKI	-		-	
S. BREVISPINIS	2		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	TRACE		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		TRACE	
LINGCOD	22		-	
PACIFIC COD	-		-	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	1		2	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	8		10	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		50	
SPINY DOGFISH	33		26	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	395		801	
REMARKS	UNUSABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	57		58	
BLOCK	I506		J506	
DATE (1984)	JUNE 08		JUNE 08	
DEPTH INTERVAL (FA)	60		60	
DURATION (H)	0.32		0.33	
DIRECTION (DEG. TRUE)	2		358	
	START	STOP	START	STOP
TIME (PDT)	10:38	10:57	12:36	12:56
LAT.(DEG,MIN)	53 00.5	53 01.5	52 57.5	52 58.6
LONG.(DEG,MIN)	130 31.3	130 31.4	130 30.1	130 30.2
LC-5990-X	12373.3	12365.5	12399	12391
LC-5990-Z	41529.3	41532.8	41519	41524
DEPTH (FA)	66	66	68	67
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	1		3	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	-		-	
ENGLISH SOLE	14		15	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	-		-	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	3		4	
REX SOLE	2		2	
ROCK SOLE	-		-	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	TRACE		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		-	
LINGCOD	-		3	
PACIFIC COD	12		4	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		1	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		TRACE	
RATFISH	TRACE		4	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	32		-	
SPINY DOGFISH	13		23	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	77		59	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	59		60	
BLOCK	J507		K404	
DATE (1984)	JUNE 08		JUNE 09	
DEPTH INTERVAL (FA)	70		40	
DURATION (H)	0.02		0.33	
DIRECTION (DEG. TRUE)	20		221	
	START	STOP	START	STOP
TIME (PDT)	17:36	17:37	10:26	10:46
LAT. (DEG,MIN)	52 52.6	0	52 44.3	52 43.6
LONG. (DEG,MIN)	130 26	0	130 51.7	130 53
LC-5990-X	12448	0	12398.3	12398
LC-5990-Z	41504	0	41445.8	41442.1
DEPTH (FA)	72	72	45	44
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	-		-	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		TRACE	
DOVER SOLE	-		-	
ENGLISH SOLE	TRACE		10	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	-		25	
PACIFIC SANDDAB	-		TRACE	
PETRALE SOLE	-		2	
REX SOLE	-		TRACE	
ROCK SOLE	-		21	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	23		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	26		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		17	
PACIFIC COD	-		3	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		TRACE	
SANDLANCE	-		-	
SCULPINS	-		TRACE	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	TRACE		8	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	-		45	
INVERTEBRATES	-		20	
TOTAL CATCH (KG.)	49		151	
REMARKS	UNUSABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	61		62	
BLOCK	K405		K406	
DATE (1984)	JUNE 09		JUNE 09	
DEPTH INTERVAL (FA)	50		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	223		222	
	START	STOP	START	STOP
TIME (PDT)	12:16	12:36	13:43	14:03
LAT. (DEG,MIN)	52 42.4	52 41.8	52 41.4	52 40.8
LONG. (DEG,MIN)	130 47.3	130 48.3	130 43.7	130 44.8
LC-5990-X	12423	12429	12451	12451
LC-5990-Z	41443	41440	41443	41440
DEPTH (FA)	57	56	67	64
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	1		38	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		3	
ENGLISH SOLE	8		3	
FLATHEAD SOLE	-		TRACE	
PACIFIC HALIBUT	2		-	
PACIFIC SANDDAB	7		2	
PETRALE SOLE	4		12	
REX SOLE	5		4	
ROCK SOLE	6		2	
SLENDER SOLE	-		TRACE	
S. ALUTUS	1		TRACE	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		39	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		TRACE	
LINGCOD	1		-	
PACIFIC COD	2		11	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	3		1	
SANDLANCE	-		-	
SCULPINS	TRACE		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	TRACE		2	
RATFISH	11		4	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		5	
SPINY DOGFISH	26		8	
INVERTEBRATES	TRACE		TRACE	
TOTAL CATCH (KG.)	77		134	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	63		64	
BLOCK	K506		K507	
DATE (1984)	JUNE 10		JUNE 10	
DEPTH INTERVAL (FA)	60		70	
DURATION (H)	0.33		0.05	
DIRECTION (DEG. TRUE)	29		54	
	START	STOP	START	STOP
TIME (PDT)	8:30	8:50	11:00	11:03
LAT. (DEG,MIN)	52 47.4	52 48.2	52 45.3	52 45.4
LONG. (DEG,MIN)	130 37.6	130 36.8	130 32.1	130 32
LC-5990-X	12433.6	12431.4	12471.6	12471
LC-5990-Z	41469.9	41474.1	41468	41468.3
DEPTH (FA)	64	64	77	77
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	TRACE		10	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	TRACE		-	
ENGLISH SOLE	9		-	
FLATHEAD SOLE	-		-	
PACIFIC HALIBUT	7		-	
PACIFIC SANDDAB	4		-	
PETRALE SOLE	5		-	
REX SOLE	1		TRACE	
ROCK SOLE	-		-	
SLENDER SOLE	TRACE		TRACE	
S. ALUTUS	1		TRACE	
S. BABCOCKI	-		-	
S. BREVISPINIS	10		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		1	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		TRACE	
LINGCOD	-		-	
PACIFIC COD	-		-	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	4		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	TRACE		TRACE	
RATFISH	2		2	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	14		-	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	57		13	
REMARKS	USABLE		UNUSABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	65		66	
BLOCK	I405		J404	
DATE (1984)	JUNE 10		JUNE 11	
DEPTH INTERVAL (FA)	50		40	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	138		129	
	START	STOP	START	STOP
TIME (PDT)	15:26	15:46	8:25	8:45
LAT. (DEG,MIN)	53 01.4	53 00.4	53 00.1	52 59.6
LONG. (DEG,MIN)	130 45.3	130 44.2	130 47.3	130 46.1
LC-5990-X	12305	12316	12305.3	12314.3
LC-5990-Z	41513	41511	41506.2	41505.8
DEPTH (FA)	56	55	47	48
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	-		TRACE	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	-		7	
ENGLISH SOLE	-		62	
FLATHEAD SOLE	-		1	
PACIFIC HALIBUT	-		-	
PACIFIC SANDDAB	-		19	
PETRALE SOLE	-		TRACE	
REX SOLE	-		159	
ROCK SOLE	-		-	
SLENDER SOLE	-		-	
S. ALUTUS	-		TRACE	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		TRACE	
LINGCOD	-		5	
PACIFIC COD	-		2	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	-		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		-	
RATFISH	-		-	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	-		31	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	0		286	
REMARKS	UNUSABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	67		68	
BLOCK	I405		I506	
DATE (1984)	JUNE 11		JUNE 11	
DEPTH INTERVAL (FA)	50		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	137		190	
	START	STOP	START	STOP
TIME (PDT)	9:33	9:53	12:25	12:45
LAT.(DEG,MIN)	53 01.2	53 00.6	53 01.3	53 00.5
LONG.(DEG,MIN)	130 45.9	130 45.2	130 31.5	130 31.6
LC-5990-X	12303.8	12310.7	12364	12369
LC-5990-Z	41512.1	41510.6	41530	41527
DEPTH (FA)	54	54	64	63
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	1		TRACE	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	2		TRACE	
ENGLISH SOLE	53		19	
FLATHEAD SOLE	2		-	
PACIFIC HALIBUT	-		3	
PACIFIC SANDDAB	13		-	
PETRALE SOLE	-		13	
REX SOLE	19		5	
ROCK SOLE	-		TRACE	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		-	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	TRACE		-	
LINGCOD	-		-	
PACIFIC COD	1		4	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	TRACE		2	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	TRACE		-	
RATFISH	TRACE		4	
BIG SKATE	-		-	
BLACK SKATE	-		1	
LONGNOSE SKATE	1		2	
SPINY DOGFISH	5		10	
INVERTEBRATES	-		-	
TOTAL CATCH (KG.)	97		63	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	69		70	
BLOCK	K404		L406	
DATE (1984)	JUNE 11		JUNE 12	
DEPTH INTERVAL (FA)	40		60	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	54		207	
	START	STOP	START	STOP
TIME (PDT)	15:22	15:42	9:24	9:44
LAT.(DEG,MIN)	52 43.6	52 44.1	52 37.1	52 36.1
LONG.(DEG,MIN)	130 52.4	130 51.3	130 48.8	130 49.7
LC-5990-X	12398	12399	12457.8	12461
LC-5990-Z	41440	41443	41422	41417.6
DEPTH (FA)	43	45	62	62
SPECIES CATCH(KG.)				
ARROWTOOTH FLOUNDER	-		6	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	-		TRACE	
ENGLISH SOLE	TRACE		8	
FLATHEAD SOLE	-		TRACE	
PACIFIC HALIBUT	1		-	
PACIFIC SANDDAB	3		11	
PETRALE SOLE	TRACE		8	
REX SOLE	TRACE		2	
ROCK SOLE	25		2	
SLENDER SOLE	-		-	
S. ALUTUS	-		-	
S. BABCOCKI	-		-	
S. BREVISPINIS	-		47	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		-	
S. PINNIGER	-		-	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	7		-	
PACIFIC COD	4		3	
PACIFIC TOMCOD	-		-	
POACHERS	TRACE		-	
SABLEFISH	1		1	
SANDLANCE	-		-	
SCULPINS	TRACE		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	-		TRACE	
RATFISH	21		9	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	89		3	
INVERTEBRATES	24		TRACE	
TOTAL CATCH (KG.)	175		100	
REMARKS	USABLE		USABLE	

Appendix table 1. Fishing log and catch (kg.) by species, by haul, for G.B. REED Groundfish Cruise No. 84-3, May 24 - June 14, 1984.

HAUL NO.	71		72	
BLOCK	L407		L507	
DATE (1984)	JUNE 12		JUNE 12	
DEPTH INTERVAL (FA)	70		70	
DURATION (H)	0.33		0.33	
DIRECTION (DEG. TRUE)	195		172	
	START	STOP	START	STOP
TIME (PDT)	11:02	11:22	12:41	13:01
LAT. (DEG,MIN)	52 34.3	52 33.5	52 39	52 38
LONG. (DEG,MIN)	130 42.6	130 43	130 38.2	130 37.9
LC-5990-X	12502.5	12505.8	12488	12495
LC-5990-Z	41417.4	41414.1	41437	41435
DEPTH (FA)	71	71	78	77
SPECIES CATCH (KG.)				
ARROWTOOTH FLOUNDER	56		28	
BUTTER SOLE	-		-	
CURLFIN SOLE	-		-	
DOVER SOLE	3		9	
ENGLISH SOLE	3		TRACE	
FLATHEAD SOLE	TRACE		6	
PACIFIC HALIBUT	-		-	
PACIFIC SANDDAB	-		-	
PETRALE SOLE	28		3	
REX SOLE	7		10	
ROCK SOLE	-		-	
SLENDER SOLE	-		TRACE	
S. ALUTUS	TRACE		2	
S. BABCOCKI	-		-	
S. BREVISPINIS	15		196	
S. FLAVIDUS	-		-	
S. MALIGER	-		-	
S. PAUCISPINIS	-		6	
S. PINNIGER	6		36	
S. PRORIGER	-		-	
S. RUBERRIMUS	-		-	
EELPOUTS	-		-	
EULACHON	-		-	
GREENLINGS	-		-	
PACIFIC HAKE	-		-	
PACIFIC HERRING	-		-	
LINGCOD	-		5	
PACIFIC COD	1		5	
PACIFIC TOMCOD	-		-	
POACHERS	-		-	
SABLEFISH	1		-	
SANDLANCE	-		-	
SCULPINS	-		-	
SHINER PERCH	-		-	
WALLEYE POLLOCK	TRACE		-	
RATFISH	3		3	
BIG SKATE	-		-	
BLACK SKATE	-		-	
LONGNOSE SKATE	-		-	
SPINY DOGFISH	-		-	
INVERTEBRATES	-		TRACE	
TOTAL CATCH (KG.)	123		309	
REMARKS	USABLE		USABLE	

Appendix table 2. Index of common and scientific names of fish species caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Common name	Scientific name
Arrowtooth flounder	Atheresthes stomias
Butter sole	Isopsetta isolepis
Curlfin sole	Pleuronichthys decurrens
Dover sole	Microstomus pacificus
English sole	Parophrys vetulus
Flathead sole	Hippoglossoides elassodon
Pacific halibut	Hippoglossus stenolepis
Pacific sanddab	Citharichthys sordidus
Petrale sole	Eopsetta jordani
Rex sole	Glyptocephalus zachirus
Rock sole	Lepidopsetta bilineata
Slender sole	Lyopsetta exilis
Eelpout	Zoarcidae
Eulachon	Thaleichthys pacificus
Herring	Clupea harengus pallasi
Lingcod	Ophiodon elongatus
Pacific cod	Gadus macrocephalus
Pacific hake	Merluccius productus
Poacher	Agonidae
Sablefish	Anoplopoma fimbria
Sandlance	Ammodytes hexapterus
Sculpin	Cottidae
Shiner perch	Cymatogaster aggregatus
Tomcod	Microgadus proximus
Walleye pollock	Theragra chalcogramma
Pacific ocean perch	Sebastes alutus
Redbanded rockfish	Sebastes babcocki
Silvergray rockfish	Sebastes brevispinis
Yellowtail rockfish	Sebastes flavidus
Quillback rockfish	Sebastes maliger
Bocaccio	Sebastes paucispinis
Canary rockfish	Sebastes pinniger
Redstripe rockfish	Sebastes proriger
Ratfish	Hydrolagus colliei
Skate--big	Raja binoculata
Skate--black	Raja kincaidi
Skate--longnose	Raja rhina
Spiny dogfish	Squalus acanthias

Appendix table 3. Catch (kg) of invertebrates, by category, by haul, during G.B. REED Groundfish Cruise 84-3, May 24-June 14, 1984

Haul no.	Category									
	Anemone	Crab	Cucumber	Octopus	Scallop	Pink Shrimp	Snail	Squid	Starfish	Urchin
1	-	-	1	-	-	T[a]	-	-	T	1
5	-	-	-	-	-	-	-	-	T	-
6	-	-	-	-	-	-	T	-	T	-
8	-	-	-	-	-	T	-	-	-	-
9	-	T[b]	-	-	-	-	-	-	-	-
18	1	-	-	-	-	-	T	-	1	-
19	-	-	1	-	-	-	-	-	-	-
20	3	-	2	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	1	-	-
25	T	-	T	-	T	-	-	-	-	-
26	-	-	37	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	T	-	-
32	-	-	-	-	-	-	-	T	-	-
37	-	-	-	-	-	-	-	T	-	-
40	-	-	-	-	-	-	T	-	19	-
41	-	-	-	-	-	-	-	3	T	-
42	T	-	-	-	-	-	-	T	T	-
43	15	-	-	1	-	-	-	T	-	-
44	-	-	-	-	-	-	-	T	-	-
45	-	-	-	-	-	-	-	T	-	-
46	5	T[c]	2	-	-	-	-	1	2	-
51	-	-	-	-	-	-	-	T	-	-
52	-	-	-	-	-	T	-	-	T	T
53	-	-	-	-	-	-	-	-	T	-
54	-	-	-	-	-	-	-	T	-	-
60	20	-	-	-	T	-	-	T	-	-
61	T	-	-	-	-	-	-	-	T	-
62	-	-	-	-	-	T	-	-	-	-
69	20	-	4	-	T	-	-	T	-	-
70	-	-	-	-	-	-	-	T	-	-
72	-	-	-	-	-	T	-	-	-	T
Total	64	T	44	1	T	T	T	5	21	1

[a]T = trace = <.5 kg.

[b]Hermit crab.

[c]Decorator crab.

Appendix table 4. Length-frequency (nos. measured), by haul, of arrowtooth flounder collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
10	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	7	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	3	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
21	1	-	-	0	-	-	-	-	1	1	1	1	-	4	1	-	1	-
22	3	-	-	0	-	-	1	2	1	2	0	2	-	1	0	-	1	-
23	6	-	-	1	-	-	2	0	0	2	0	0	2	0	0	-	4	-
24	0	-	-	0	-	2	2	0	0	1	0	0	1	0	0	-	1	-
25	3	-	-	1	1	0	5	1	0	0	0	1	1	0	0	-	2	2
26	2	-	-	0	1	0	5	2	1	0	0	0	0	1	0	-	0	2
27	0	-	-	1	0	0	2	2	0	3	1	0	0	1	0	-	0	3
28	1	-	-	3	5	1	4	3	0	7	0	1	1	0	0	-	2	0
29	3	-	-	4	1	1	2	1	2	8	0	4	1	2	0	-	0	2
30	1	-	-	3	2	4	2	3	2	5	1	6	0	1	1	2	3	0
31	1	-	-	6	0	3	2	0	3	13	0	3	0	0	1	0	2	0
32	0	-	-	6	8	1	1	0	0	17	0	5	1	1	1	0	2	3
33	3	-	-	5	3	4	1	1	1	17	0	3	1	1	0	0	1	0
34	4	-	-	4	4	7	2	3	3	20	0	8	1	1	0	0	0	1
35	3	-	-	4	6	5	3	3	1	23	0	12	2	2	0	2	2	0
36	2	-	-	11	8	21	1	4	3	26	0	12	2	7	0	0	1	0
37	0	-	-	14	20	19	4	3	2	23	0	11	6	4	0	3	2	1
38	1	-	-	20	16	27	5	8	10	29	0	7	6	13	0	0	0	2
39	-	-	-	12	21	35	6	6	6	40	2	9	8	10	1	0	3	3
40	-	-	-	14	24	36	5	10	3	31	3	17	5	14	1	1	3	5
41	-	-	-	21	31	37	8	17	6	34	4	12	5	16	0	2	3	1
42	-	-	-	8	34	37	5	15	4	25	3	11	8	13	1	2	2	5
43	-	-	-	16	23	28	7	18	1	14	1	17	9	14	0	3	3	6
44	-	-	-	19	32	27	10	16	5	23	3	13	11	17	0	4	6	5
45	-	-	-	19	29	26	8	13	4	17	7	17	16	23	0	9	4	9
46	-	-	-	12	22	26	7	18	5	16	10	19	18	15	1	8	5	9
47	-	-	-	18	23	21	5	11	7	20	6	21	13	25	1	3	4	9
48	-	-	-	21	25	19	6	17	3	5	13	23	14	28	1	2	4	10
49	-	-	-	17	18	26	5	22	5	15	7	19	12	16	3	5	7	9
50	-	-	-	18	28	21	6	19	3	8	7	14	18	15	0	5	9	11
51	-	-	-	8	20	19	3	16	3	4	6	12	14	13	1	3	2	8
52	-	-	-	13	8	16	10	7	6	7	7	12	15	13	1	5	2	8
53	-	-	-	12	11	12	6	10	7	3	1	8	6	4	3	3	4	5
54	-	-	-	7	7	7	4	13	5	5	1	4	7	2	1	1	0	6
55	-	-	-	2	6	5	6	7	1	5	1	4	5	2	0	4	3	6
56	-	-	-	2	5	4	4	6	1	1	2	5	5	2	0	2	0	1
57	-	-	-	1	5	8	1	3	1	1	2	2	3	2	0	2	0	2
58	-	-	-	4	3	2	2	1	0	0	2	1	2	0	0	2	0	2
59	-	-	-	1	2	3	0	4	3	1	1	2	2	0	1	1	2	1
60	-	-	-	1	2	1	2	2	3	1	1	1	0	0	1	0	2	4
61	-	-	-	0	2	2	0	2	-	2	2	0	0	0	0	0	0	2
62	-	-	-	1	1	3	0	1	-	0	0	3	3	0	2	1	0	3
63	-	-	-	1	0	1	0	2	-	1	1	1	1	0	1	0	0	2
64	-	-	-	-	1	-	0	0	-	1	1	2	1	0	1	0	1	1
65	-	-	-	-	0	-	0	0	-	-	1	0	0	6	0	0	1	0
66	-	-	-	-	0	-	1	0	-	-	-	0	1	0	0	0	0	0
67	-	-	-	-	1	-	-	0	-	-	-	1	1	0	2	0	0	1
68	-	-	-	-	-	-	-	0	-	-	-	0	0	1	2	1	0	-
69	-	-	-	-	-	-	-	1	-	-	-	2	0	-	0	-	0	-
70	-	-	-	-	-	-	-	1	-	-	-	0	0	-	1	-	1	-
71	-	-	-	-	-	-	-	-	-	-	-	1	0	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Total	50	9	5	332	458 (698	518 2173)	156	294	112	478 (931)	98	329 (758)	229	290	29	76	95	150

Appendix table 4. Length-frequency (nos. measured), by haul, of arrowtooth flounder collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	20	23	24	27	28	29	30	31	33	34	36	37	38	39	40	44	47	48
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	1
13	1	1	-	0	-	-	-	-	-	-	5	3	1	-	-	1	-	1
14	1	0	-	0	-	-	-	-	-	-	3	2	0	-	-	-	-	1
15	2	3	-	0	-	-	-	-	-	-	5	1	0	-	-	-	-	5
16	2	0	-	0	-	-	-	-	-	-	3	0	0	-	-	-	-	1
17	1	0	-	0	-	-	-	-	-	-	1	0	0	-	-	-	-	0
18	0	0	-	0	-	-	-	-	-	-	0	1	0	-	-	-	-	0
19	0	0	-	0	-	-	1	-	-	-	0	1	0	-	-	-	-	0
20	1	0	-	2	-	-	1	2	-	-	1	-	0	-	-	-	-	2
21	4	1	-	1	-	-	1	2	1	-	8	-	0	1	-	-	-	4
22	1	0	-	1	-	-	0	1	0	-	2	-	0	0	-	-	-	5
23	0	1	-	1	1	1	0	3	0	1	3	-	0	0	-	-	-	2
24	2	0	-	0	1	1	1	0	0	0	1	-	0	0	-	-	-	3
25	1	1	-	2	0	0	-	1	4	0	2	-	0	0	-	-	-	6
26	1	0	-	0	1	0	-	0	1	1	3	-	0	0	-	-	-	5
27	2	0	-	1	3	2	-	2	0	0	2	-	0	0	-	-	-	4
28	0	0	1	0	1	2	-	0	0	0	3	-	0	1	-	-	-	0
29	1	0	0	0	3	1	-	0	1	0	0	-	0	0	-	-	-	1
30	0	0	0	2	2	2	-	0	3	0	1	-	0	0	-	-	-	0
31	2	0	0	0	3	3	-	1	2	0	0	-	0	0	1	-	-	0
32	0	0	0	0	0	2	-	-	2	0	0	-	0	0	0	-	-	1
33	1	0	0	0	0	2	-	-	5	0	1	-	0	0	0	-	-	1
34	0	0	0	1	0	2	-	-	4	0	0	-	0	0	1	-	-	0
35	0	1	0	0	0	13	-	-	3	0	0	-	0	0	0	-	-	0
36	0	0	0	0	0	16	-	-	16	0	0	-	0	0	0	-	-	0
37	0	0	0	0	0	12	-	-	11	0	1	-	0	0	0	-	-	0
38	0	0	1	0	0	14	-	-	25	1	0	-	0	1	0	-	-	0
39	0	0	-	0	0	31	-	-	24	2	0	-	0	0	0	-	-	0
40	0	0	-	0	1	32	-	-	36	0	0	-	0	2	2	-	-	0
41	1	0	-	0	1	35	-	-	60	1	0	-	0	0	2	-	-	1
42	0	1	-	1	2	36	-	-	46	2	0	-	0	1	1	-	-	0
43	2	0	-	0	0	28	-	-	57	3	0	-	1	2	2	-	-	0
44	2	1	-	1	3	25	-	-	51	0	1	-	1	2	1	-	-	0
45	1	0	-	-	0	12	-	-	36	1	3	-	0	1	1	-	-	0
46	2	0	-	-	1	10	-	-	33	2	0	-	1	1	0	-	-	0
47	2	0	-	-	2	11	-	-	21	1	0	-	1	1	0	-	-	0
48	2	0	-	-	0	10	-	-	24	2	0	-	1	0	0	-	-	0
49	4	0	-	-	0	4	-	-	20	0	2	-	1	1	1	-	-	0
50	2	0	-	-	0	4	-	-	15	0	0	-	0	6	2	-	-	0
51	3	0	-	-	0	3	-	-	12	0	0	-	0	2	2	-	-	0
52	3	0	-	-	1	3	-	-	13	0	2	-	1	2	2	-	-	0
53	0	0	-	-	0	1	-	-	8	0	1	-	1	1	2	-	-	0
54	0	0	-	-	0	0	-	-	5	0	0	-	0	2	0	-	1	0
55	1	1	-	-	0	3	-	-	5	0	0	-	0	0	0	-	0	1
56	0	-	-	-	0	3	-	-	8	1	2	-	0	2	2	-	0	1
57	0	-	-	-	0	4	-	-	5	0	0	-	2	2	1	-	0	-
58	0	-	-	-	1	0	-	-	8	0	0	-	1	3	1	-	1	-
59	0	-	-	-	0	1	-	-	1	0	1	-	1	0	0	-	-	-
60	0	-	-	-	1	0	-	-	2	0	-	-	0	1	1	-	-	-
61	0	-	-	-	0	0	-	-	0	1	-	-	0	2	1	-	-	-
62	1	-	-	-	0	1	-	-	0	0	-	-	0	1	1	-	-	-
63	-	-	-	-	0	1	-	-	0	1	-	-	0	3	0	-	-	-
64	-	-	-	-	0	0	-	-	0	0	-	-	1	-	0	-	-	-
65	-	-	-	-	0	0	-	-	1	0	-	-	0	-	0	-	-	-
66	-	-	-	-	0	1	-	-	0	0	-	-	2	-	0	-	-	-
67	-	-	-	-	0	0	-	-	0	1	-	-	0	-	0	-	-	-
68	-	-	-	-	1	1	-	-	1	-	-	-	0	-	1	-	-	-
69	-	-	-	-	-	-	-	-	1	-	-	-	0	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	49	11	2	14	29	333	4	12	571	21	57	8	18	41	28	1	2	46

Appendix table 4. Length-frequency (nos. measured), by haul, of arrowtooth flounder collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	49	50	51	52	53	54	56	57	58	61	62	63	66	67	68	70	71	72
10	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-
11	-	-	1	1	-	-	-	-	0	-	-	-	-	0	-	1	-	-
12	-	2	1	3	7	-	-	7	2	-	-	-	-	3	1	3	9	2
13	-	5	2	2	2	1	-	11	12	-	1	1	2	5	3	3	11	5
14	-	1	0	3	3	0	-	7	7	-	0	0	1	0	1	2	19	7
15	-	1	0	0	0	1	-	1	1	-	0	0	0	1	0	0	9	5
16	-	0	1	0	0	-	-	1	1	-	0	0	0	1	0	0	1	0
17	-	2	0	0	0	-	-	-	0	-	0	0	0	2	0	0	0	0
18	-	1	0	0	1	-	-	-	0	-	0	0	0	0	0	0	1	0
19	-	2	2	2	2	-	-	-	0	-	0	0	0	1	0	0	1	0
20	-	0	1	4	1	-	-	-	0	-	0	0	2	3	0	0	1	1
21	-	1	-	5	3	-	1	-	0	-	1	0	1	3	0	0	2	2
22	-	1	-	4	0	-	3	-	0	-	0	0	0	1	0	0	3	0
23	-	0	-	0	2	-	0	-	0	-	0	0	0	1	2	0	0	3
24	1	0	-	0	1	-	2	-	0	-	0	0	2	1	0	0	5	1
25	1	0	-	3	3	-	2	-	0	-	0	0	0	-	0	0	3	4
26	2	0	-	0	1	-	2	-	0	1	1	0	0	-	0	0	3	2
27	2	0	-	1	2	-	0	-	0	0	1	0	0	-	0	0	4	3
28	4	0	-	2	0	-	2	-	0	0	1	0	1	-	0	0	3	0
29	1	0	-	0	1	-	5	-	0	0	1	0	0	-	0	0	5	1
30	2	0	-	2	0	-	0	-	0	0	1	0	1	-	0	0	3	0
31	2	0	-	0	0	-	3	-	0	0	0	0	0	-	0	0	0	0
32	6	0	-	0	0	-	1	-	0	0	0	0	0	-	0	0	3	1
33	3	0	-	2	0	-	0	-	0	0	1	0	0	-	0	0	6	1
34	9	1	-	0	0	-	4	-	0	0	0	0	0	-	0	0	5	2
35	12	-	-	1	1	-	6	-	0	0	0	0	0	-	0	0	1	1
36	9	-	-	1	0	-	13	-	0	0	0	0	1	-	0	0	4	0
37	14	-	-	0	0	-	13	-	0	0	2	0	-	-	0	0	4	1
38	15	-	-	0	1	-	7	-	0	1	1	0	-	-	0	0	4	1
39	17	-	-	0	-	-	7	-	0	-	1	0	-	-	0	0	4	1
40	11	-	-	0	-	-	11	-	0	-	1	1	-	-	0	0	2	0
41	10	-	-	1	-	-	10	-	0	-	2	-	-	-	0	1	1	2
42	16	-	-	0	-	-	19	-	0	-	1	-	-	-	1	1	2	0
43	6	-	-	5	-	-	17	-	0	-	0	-	-	-	-	0	5	0
44	9	-	-	1	-	-	26	-	0	-	0	-	-	-	-	0	5	1
45	8	-	-	1	-	-	25	-	0	-	3	-	-	-	-	0	2	1
46	7	-	-	4	-	-	20	-	0	-	0	-	-	-	-	0	0	0
47	8	-	-	0	-	-	32	-	0	-	1	-	-	-	-	0	0	0
48	9	-	-	3	-	-	31	-	0	-	2	-	-	-	-	0	1	0
49	9	-	-	2	-	-	21	-	0	-	5	-	-	-	-	0	2	0
50	7	-	-	4	-	-	7	-	1	-	2	-	-	-	-	0	0	2
51	9	-	-	2	-	-	17	-	1	-	2	-	-	-	-	1	1	1
52	10	-	-	1	-	-	11	-	-	-	1	-	-	-	-	1	2	0
53	11	-	-	3	-	-	13	-	-	-	1	-	-	-	-	0	1	0
54	9	-	-	3	-	-	15	-	-	-	1	-	-	-	-	1	3	1
55	6	-	-	2	-	-	17	-	-	-	1	-	-	-	-	1	3	2
56	8	-	-	3	-	-	9	-	-	-	3	-	-	-	-	1	2	0
57	2	-	-	3	-	-	11	-	-	-	0	-	-	-	-	-	1	2
58	1	-	-	0	-	-	10	-	-	-	0	-	-	-	-	-	0	0
59	4	-	-	2	-	-	8	-	-	-	1	-	-	-	-	-	2	1
60	2	-	-	0	-	-	9	-	-	-	0	-	-	-	-	-	1	0
61	2	-	-	1	-	-	3	-	-	-	1	-	-	-	-	-	-	1
62	-	-	-	1	-	-	5	-	-	-	2	-	-	-	-	-	-	0
63	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	0
64	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	0
65	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	0
66	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	0
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	263	17	8	78	31	2	426 (622)	27	26	2	42	2	11	23	8	15	150	59

Appendix table 5. Length-frequency (nos. measured), by haul, of Dover sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	1	5	6	7	8	9	10	12	13	14	15	16	17	18	19	20	22	23
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	0	1
20	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	0	0
21	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	4	2	1
22	1	-	-	-	-	-	-	-	-	-	-	-	-	20	1	10	1	0
23	-	-	-	-	-	-	-	-	-	-	-	-	-	36	5	4	1	0
24	-	-	-	-	-	-	-	-	-	-	-	-	-	30	4	8	1	0
25	-	-	-	-	-	-	-	-	-	-	-	-	-	40	12	3	-	1
26	-	-	-	-	1	-	-	-	-	-	-	-	1	23	7	0	-	-
27	-	-	-	-	1	-	-	-	-	-	-	-	0	16	10	1	-	-
28	-	-	-	-	1	-	-	-	-	-	1	-	0	17	25	0	-	-
29	-	-	-	-	9	1	1	-	-	1	0	-	0	9	31	1	-	-
30	-	-	-	-	9	0	3	1	-	0	0	1	1	7	45	-	-	-
31	-	-	-	-	13	0	15	2	2	1	2	1	0	5	44	-	-	-
32	-	-	-	1	25	1	13	2	1	0	2	1	2	3	30	-	-	-
33	-	-	-	4	33	5	31	2	5	3	10	4	1	0	31	-	-	-
34	-	-	-	2	52	7	45	0	1	4	9	0	2	2	26	-	-	-
35	-	-	1	2	54	18	36	2	2	6	6	3	6	0	16	-	-	-
36	-	-	0	6	58	26	31	2	2	10	0	6	4	1	11	-	-	-
37	-	1	0	4	66	27	16	3	0	4	3	3	8	-	14	-	-	-
38	-	-	0	1	45	24	21	2	0	5	3	3	7	-	8	-	-	-
39	-	-	2	2	38	19	14	0	1	6	2	2	3	-	5	-	-	-
40	-	-	1	5	23	27	12	3	2	5	7	0	4	-	5	-	-	-
41	-	-	1	4	15	23	7	3	1	3	1	2	2	-	1	-	-	-
42	-	-	1	1	9	16	5	0	2	4	4	3	6	-	0	-	-	-
43	-	-	0	0	9	17	3	1	3	5	3	0	4	-	0	-	-	-
44	-	-	0	2	4	20	5	0	4	5	1	0	6	-	0	-	-	-
45	-	-	0	1	3	12	1	1	2	4	3	1	9	-	1	-	-	-
46	-	-	0	1	1	8	4	0	2	1	0	1	9	-	-	-	-	-
47	-	-	0	1	3	10	1	0	0	1	1	0	4	-	-	-	-	-
48	-	-	0	0	1	8	0	0	5	4	1	0	9	-	-	-	-	-
49	-	-	0	0	4	10	0	0	2	4	1	1	10	-	-	-	-	-
50	-	-	0	0	0	7	4	0	4	6	0	1	10	-	-	-	-	-
51	-	-	1	0	1	13	4	0	7	2	2	2	10	-	-	-	-	-
52	-	-	-	0	0	5	1	0	3	1	0	0	9	-	-	-	-	-
53	-	-	-	0	0	6	2	0	1	2	0	0	5	-	-	-	-	-
54	-	-	-	0	1	14	5	0	3	1	0	0	3	-	-	-	-	-
55	-	-	-	1	1	3	4	2	0	1	1	0	6	-	-	-	-	-
56	-	-	-	-	0	4	1	-	1	1	0	1	4	-	-	-	-	-
57	-	-	-	-	0	5	2	-	0	1	0	-	0	-	-	-	-	-
58	-	-	-	-	1	4	2	-	0	0	2	-	5	-	-	-	-	-
59	-	-	-	-	-	1	3	-	0	0	-	-	-	-	-	-	-	-
60	-	-	-	-	-	2	2	-	1	0	-	-	-	-	-	-	-	-
61	-	-	-	-	-	1	0	-	-	1	-	-	-	-	-	-	-	-
62	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	1	7	38	481	345 (882)	296	26	57	91	65	36	150	220	332	38	6	3

Appendix table 5. Length-frequency (nos. measured), by haul, of Dover sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	27	28	29	30	31	32	33	34	36	37	38	39	40	43	44	47	48	49
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	1	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
21	-	1	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-
22	-	1	-	-	-	0	-	-	-	-	-	-	1	-	-	-	1	-
23	-	2	-	-	-	1	-	-	-	-	-	1	1	-	-	-	1	-
24	2	1	-	-	-	1	-	-	-	1	-	0	1	-	-	-	3	-
25	0	1	1	-	-	5	-	-	-	0	-	2	8	1	-	-	2	-
26	2	4	1	-	1	0	-	-	-	1	-	1	4	-	-	1	2	3
27	0	3	0	-	0	0	-	-	1	-	-	0	10	-	-	0	1	0
28	1	6	8	2	0	1	1	3	0	-	-	2	5	-	-	1	2	1
29	2	3	16	0	0	1	3	0	0	-	-	0	18	-	-	0	0	4
30	1	1	15	0	1	0	0	0	0	-	-	1	37	-	-	2	1	9
31	4	1	21	0	-	1	5	0	1	-	2	1	22	-	-	-	2	9
32	1	3	27	0	-	0	1	1	0	-	2	7	32	-	-	-	1	10
33	4	2	21	1	-	1	7	1	1	-	5	6	23	-	-	-	0	2
34	0	0	9	-	-	1	9	1	1	-	3	5	13	-	-	-	0	4
35	0	3	12	-	-	-	4	1	0	-	2	8	11	-	-	-	0	4
36	2	1	5	-	-	-	3	0	1	-	4	11	4	-	-	-	0	3
37	1	0	2	-	-	-	0	1	0	-	3	13	6	-	-	-	0	4
38	0	1	5	-	-	-	2	0	0	-	4	6	8	-	-	-	0	2
39	0	0	7	-	-	-	0	0	0	-	12	8	1	-	-	-	0	2
40	0	0	10	-	-	-	3	0	0	-	8	10	8	-	-	-	0	0
41	0	1	7	-	-	-	4	0	0	-	4	5	0	-	-	-	0	2
42	0	1	9	-	-	-	2	0	0	-	7	1	0	-	-	-	0	0
43	0	2	8	-	-	-	0	1	0	-	4	2	1	-	-	-	1	2
44	0	1	13	-	-	-	1	0	0	-	2	2	-	-	-	-	-	1
45	0	2	11	-	-	-	1	0	0	-	4	0	-	-	-	-	-	0
46	1	1	6	-	-	-	2	0	1	-	2	0	-	-	-	-	-	0
47	-	1	3	-	-	-	2	1	-	-	3	0	-	-	-	-	-	1
48	-	-	2	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-
49	-	-	6	-	-	-	1	-	-	-	3	0	-	-	-	-	-	-
50	-	-	2	-	-	-	-	-	-	-	0	2	-	-	-	-	-	-
51	-	-	1	-	-	-	-	-	-	-	5	0	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	3	0	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	7	0	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	8	3	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	1	0	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	4	0	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	1	0	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	0	1	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Total	21	44	228	3	2	15	52	10	3	2	117	106	214	1	1	4	17	61

Appendix table 5. Length-frequency (nos. measured), by haul, of Dover sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.													
	50	51	52	53	56	61	62	63	66	67	68	70	71	72
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	1	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	2	-	-	-	-	-
18	-	-	-	-	-	-	-	-	3	-	-	-	-	-
19	-	-	-	-	-	-	-	-	2	1	-	-	-	-
20	-	-	-	-	-	-	-	-	7	0	-	-	-	-
21	-	-	-	-	-	-	-	-	7	0	-	1	-	-
22	-	1	-	-	-	-	-	-	4	0	-	-	-	-
23	-	0	-	-	-	-	-	-	8	3	1	-	-	-
24	-	0	-	-	-	-	-	1	5	3	0	-	-	-
25	-	0	-	-	-	-	-	0	8	1	0	-	-	-
26	1	1	-	1	-	-	-	1	6	1	0	-	1	-
27	-	1	-	1	1	-	-	0	3	1	1	-	0	-
28	-	-	-	1	4	-	1	0	1	1	-	-	0	-
29	-	-	-	0	0	-	0	0	1	3	-	-	0	-
30	-	-	-	0	1	-	1	0	2	0	-	-	0	-
31	-	-	-	1	2	-	2	0	3	1	-	-	0	-
32	-	-	-	-	1	-	0	1	1	-	-	-	3	-
33	-	-	-	-	2	-	1	-	3	-	-	-	1	1
34	-	-	-	-	4	-	0	-	-	-	-	-	0	0
35	-	-	-	-	2	-	0	-	-	-	-	-	1	1
36	-	-	-	-	0	-	1	-	-	-	-	-	-	1
37	-	-	-	-	1	-	0	-	-	-	-	-	-	1
38	-	-	-	-	0	-	0	-	-	-	-	-	-	0
39	-	-	1	-	1	-	1	-	-	-	-	-	-	4
40	-	-	0	-	0	-	0	-	-	-	-	-	-	1
41	-	-	0	-	1	-	0	-	-	-	-	-	-	0
42	-	-	0	-	0	-	0	-	-	-	-	-	-	0
43	-	-	1	-	2	-	0	-	-	-	-	-	-	1
44	-	-	-	-	1	-	0	-	-	-	-	-	-	1
45	-	-	-	-	0	-	0	-	-	-	-	-	-	0
46	-	-	-	-	0	-	0	-	-	-	-	-	-	0
47	-	-	-	-	0	-	1	-	-	-	-	-	-	1
48	-	-	-	-	1	-	-	-	-	-	-	-	-	0
49	-	-	-	-	1	-	-	-	-	-	-	-	-	1
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	3	2	4	25	1	8	3	66	15	2	1	6	13

Appendix table 6. Length-frequency (nos. measured), by haul, of English sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	1	2	4	5	7	8	9	10	12	13	14	15	16	17	18	19	20	22
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-
13	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	2	1
14	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	3	0
15	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	13	0
16	-	-	-	-	-	-	-	-	-	-	0	-	-	-	1	-	17	1
17	-	-	-	-	-	-	-	-	-	-	0	-	-	-	4	-	31	3
18	-	1	1	-	-	-	-	-	-	-	0	-	-	-	9	1	58	6
19	-	4	0	-	-	-	-	-	-	-	0	-	-	-	21	3	86	21
20	-	2	0	-	-	-	-	-	-	-	0	-	-	-	42	3	97	20
21	-	1	0	-	-	-	-	-	-	-	0	-	-	-	64	5	79	19
22	1	1	0	2	-	-	-	-	-	-	0	-	-	1	55	11	70	22
23	0	1	0	-	-	-	-	-	-	-	0	-	-	0	64	7	103	17
24	1	1	0	-	1	-	-	-	-	-	0	-	-	0	49	8	109	16
25	0	2	0	-	1	1	-	-	-	-	0	-	-	0	63	14	97	15
26	0	1	0	-	0	0	-	-	-	-	0	-	-	0	67	22	100	10
27	2	3	0	-	0	1	-	-	-	-	0	1	-	0	80	38	71	11
28	0	2	0	-	0	1	-	-	-	-	0	0	-	0	55	31	60	4
29	1	1	0	-	0	2	-	-	-	-	0	0	-	0	54	29	47	6
30	1	0	1	-	0	2	-	-	-	-	0	0	-	0	44	37	39	10
31	-	0	0	-	1	7	-	-	-	-	0	2	-	0	38	31	25	8
32	-	1	0	-	1	19	-	-	-	-	0	4	-	0	25	33	32	9
33	-	0	0	-	1	24	-	-	-	-	0	6	-	0	13	16	25	10
34	-	0	1	-	2	46	-	-	-	-	2	5	-	1	15	24	14	16
35	-	0	1	-	1	58	1	-	-	-	3	5	-	0	13	21	8	14
36	-	0	0	-	2	52	0	2	-	-	4	13	-	1	8	16	6	6
37	-	0	0	-	9	61	0	0	-	1	3	7	-	1	6	12	5	6
38	-	1	1	-	5	54	0	1	1	0	7	8	-	0	2	4	5	0
39	-	-	2	-	4	46	0	1	0	0	11	3	-	0	3	2	4	6
40	-	-	-	-	9	29	0	1	0	0	5	2	1	1	0	8	6	6
41	-	-	-	-	8	19	0	2	1	0	7	4	-	0	0	2	2	2
42	-	-	-	-	6	9	0	0	1	0	5	1	-	0	1	1	2	3
43	-	-	-	-	2	6	1	0	1	1	3	1	-	0	0	-	0	2
44	-	-	-	-	3	0	0	1	-	1	5	0	-	2	0	-	2	0
45	-	-	-	-	1	1	1	0	-	-	2	2	-	0	0	-	-	1
46	-	-	-	-	2	0	0	1	-	-	3	0	-	1	0	-	-	-
47	-	-	-	-	1	0	1	1	-	-	0	0	-	-	0	-	-	-
48	-	-	-	-	0	4	0	2	-	-	1	1	-	-	0	-	-	-
49	-	-	-	-	1	2	0	-	-	-	0	-	-	-	0	-	-	-
50	-	-	-	-	-	-	1	-	-	-	0	-	-	-	1	-	-	-
51	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Total	6	22	7	2	61	444	5	12	4	3	65	65	1	8	797 (7185)	379	1219	271

Appendix table 6. Length-frequency (nos. measured), by haul, of English sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	23	24	27	28	29	30	31	32	33	34	36	37	38	39	40	41	42	43
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	-
13	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	2	1
14	-	1	-	-	-	-	-	4	-	-	-	-	-	-	-	-	2	8
15	-	0	-	-	-	-	-	5	-	-	-	-	-	-	-	-	0	14
16	2	0	-	-	-	-	1	4	-	-	-	1	-	-	-	-	1	15
17	2	2	-	-	-	-	3	12	-	-	-	1	-	-	-	-	0	13
18	4	9	-	-	-	-	4	43	-	-	-	2	-	-	-	-	0	10
19	1	25	2	-	-	2	3	61	1	-	3	1	-	-	2	-	0	9
20	5	27	1	1	1	2	11	60	0	1	8	15	-	-	0	-	1	11
21	7	27	3	0	0	7	11	40	0	4	8	9	-	-	0	-	-	9
22	12	21	5	3	0	10	9	27	0	7	13	11	-	2	2	-	-	10
23	5	22	3	1	0	9	9	27	0	4	21	6	-	0	2	-	-	10
24	5	14	4	6	0	14	14	11	2	12	23	9	1	0	0	-	-	11
25	6	9	4	6	1	26	9	21	0	10	23	9	0	1	1	-	-	4
26	1	7	11	13	0	22	8	29	4	17	30	9	0	1	6	-	-	6
27	9	11	9	25	4	22	6	32	3	32	16	10	0	0	6	-	-	4
28	6	5	13	27	2	16	7	25	11	17	21	5	0	0	4	-	-	8
29	2	8	17	40	4	5	4	31	21	28	19	6	0	0	6	-	-	7
30	1	2	17	29	8	7	3	20	27	36	8	4	1	2	5	-	-	9
31	3	3	24	44	16	7	5	27	34	28	10	5	1	0	10	-	-	5
32	2	6	22	28	12	5	3	27	38	23	6	7	1	1	6	-	-	8
33	1	1	12	20	15	1	0	17	36	21	5	3	1	2	2	-	-	6
34	2	6	17	21	13	0	1	12	29	11	3	5	1	3	3	-	-	4
35	3	2	13	6	7	1	1	9	21	13	3	2	0	2	7	-	-	11
36	0	1	21	10	5	1	-	8	23	11	1	2	1	1	1	-	-	2
37	2	2	11	6	1	-	-	2	17	10	0	5	1	3	7	-	-	8
38	2	3	21	4	1	-	-	2	15	10	1	4	2	3	1	-	-	6
39	4	3	12	0	0	-	-	0	4	5	0	0	2	3	1	-	-	2
40	5	5	15	1	1	-	-	2	6	7	0	2	0	2	1	-	-	7
41	3	2	17	0	-	-	-	1	3	2	1	1	0	1	0	-	-	1
42	0	1	3	1	-	-	-	-	3	3	1	3	1	0	1	-	-	0
43	5	1	1	-	-	-	-	-	2	1	-	2	-	1	-	-	-	0
44	2	1	4	-	-	-	-	-	-	1	-	1	-	-	-	-	-	0
45	3	-	3	-	-	-	-	-	-	1	-	1	-	-	-	-	-	0
46	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
47	1	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
48	0	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
49	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	110	227	288	292	91	157	112	562	300	315	224	141	13	28	74	1	7	220

Appendix table 6. Length-frequency (nos. measured), by haul, of English sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	44	47	48	49	50	51	52	53	54	56	57	58	60	61	62	63	66	67
10	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
12	1	-	-	-	-	-	-	-	1	-	-	-	0	-	-	-	-	-
13	3	-	-	-	-	-	-	-	2	-	-	-	0	-	-	-	-	-
14	6	1	-	-	-	-	-	-	4	-	-	-	0	-	-	-	-	-
15	8	1	-	-	-	-	-	-	23	1	-	-	0	2	-	-	-	-
16	9	5	-	-	-	-	-	-	37	0	-	-	1	0	-	-	1	1
17	9	7	-	-	-	-	-	-	18	0	-	-	3	2	-	-	1	0
18	8	8	6	-	-	-	-	-	16	0	-	-	5	5	-	1	1	2
19	3	2	8	-	-	-	-	-	32	0	-	-	4	6	-	1	5	8
20	3	6	7	1	-	-	-	-	32	0	2	-	9	2	-	1	5	7
21	1	9	21	1	1	2	-	3	31	0	4	1	3	4	-	1	9	8
22	1	5	26	0	0	1	-	2	27	0	1	1	0	3	-	3	10	12
23	0	4	23	0	1	5	-	1	28	0	0	2	1	2	1	3	7	13
24	0	4	33	1	2	7	2	3	17	0	0	3	3	3	0	6	5	14
25	0	7	33	1	3	4	2	2	30	0	1	5	0	2	2	10	10	15
26	1	7	17	1	3	6	1	3	28	0	3	7	1	0	2	7	3	11
27	0	4	22	1	3	8	3	8	28	0	3	6	7	3	1	8	5	22
28	0	6	29	2	5	4	5	4	30	0	2	6	4	1	0	4	6	15
29	1	4	26	2	3	10	1	2	27	1	7	3	4	1	0	4	12	15
30	-	2	23	3	4	9	4	2	25	1	8	5	2	0	1	2	2	21
31	-	7	21	4	1	9	3	2	28	4	4	5	1	5	2	5	8	17
32	-	7	13	2	2	6	7	2	32	4	1	1	0	2	0	2	7	13
33	-	9	11	2	2	5	6	1	23	4	6	6	3	2	0	1	8	7
34	-	14	12	2	2	0	3	-	38	1	2	1	1	2	0	0	5	15
35	-	6	3	1	-	0	1	-	33	4	2	2	0	1	0	1	8	10
36	-	14	4	2	-	1	0	-	29	5	3	1	2	0	1	-	11	4
37	-	9	5	-	-	2	2	-	40	6	0	2	1	0	0	-	9	8
38	-	10	3	-	-	1	1	-	36	5	2	1	1	1	0	-	10	2
39	-	8	5	-	-	-	0	-	41	3	1	0	1	0	0	-	4	1
40	-	13	4	-	-	-	0	-	33	3	1	0	0	0	0	-	9	0
41	-	9	2	-	-	-	1	-	20	0	0	0	1	0	1	-	5	1
42	-	10	-	-	-	-	-	-	15	0	1	1	-	0	-	-	5	2
43	-	3	-	-	-	-	-	-	17	0	-	-	-	0	-	-	5	-
44	-	5	-	-	-	-	-	-	9	1	-	-	-	0	-	-	2	-
45	-	3	-	-	-	-	-	-	6	-	-	-	-	0	-	-	2	-
46	-	5	-	-	-	-	-	-	5	-	-	-	-	1	-	-	5	-
47	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	1	-
48	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	1	-
49	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	54	214	357	26	32	80	42	35	845	43	54	59	59	50	11	60	187	244

Appendix table 6. Length-frequency (nos. measured), by haul, of English sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no. 68	69	70	71	72
10	-	-	-	-	-
11	-	-	-	-	-
12	-	1	-	-	-
13	-	0	-	-	-
14	-	0	1	-	-
15	-	0	0	-	-
16	-	0	0	1	-
17	-	3	0	0	-
18	-	0	3	0	-
19	3	2	2	1	-
20	3	-	3	3	-
21	7	-	2	1	-
22	3	-	2	0	-
23	4	-	3	1	-
24	2	-	2	1	-
25	6	-	0	3	-
26	3	-	0	2	1
27	5	-	1	4	1
28	2	-	1	1	0
29	6	-	5	1	1
30	3	-	0	0	-
31	2	-	2	3	-
32	4	-	3	1	-
33	5	-	1	0	-
34	3	-	0	1	-
35	5	-	0	-	-
36	4	-	2	-	-
37	4	-	1	-	-
38	2	-	1	-	-
39	0	-	1	-	-
40	1	-	0	-	-
41	1	-	1	-	-
42	1	-	-	-	-
43	1	-	-	-	-
44	-	-	-	-	-
45	-	-	-	-	-
46	-	-	-	-	-
47	-	-	-	-	-
48	-	-	-	-	-
49	-	-	-	-	-
50	-	-	-	-	-
51	-	-	-	-	-
52	-	-	-	-	-
Total	80	6	37	24	3

Appendix table 7. Length-frequency (nos. measured), by haul, of flathead sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	1	8	9	10	15	18	19	20	27	28	29	30	31	32	33	37	39	40
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	0	-	-	0	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	0	-	-	0	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	0	-	2	0	-	-	-	-
16	-	-	-	-	-	-	-	-	1	-	0	1	1	1	-	1	-	-
17	1	-	-	-	-	-	-	-	3	1	0	3	1	0	-	2	-	-
18	0	-	-	-	-	-	-	-	8	0	2	0	3	6	-	1	-	-
19	1	-	-	-	-	4	1	1	12	2	1	2	1	4	-	-	-	1
20	0	-	-	-	-	3	2	3	21	4	0	0	3	1	-	-	-	0
21	0	-	-	-	-	3	2	1	8	1	1	1	1	2	-	-	-	0
22	0	2	-	-	-	9	0	3	6	2	1	0	2	0	-	-	-	1
23	0	3	-	-	-	6	2	1	1	11	0	2	0	2	-	-	-	3
24	0	4	-	-	-	1	0	0	2	8	2	1	2	-	-	-	-	2
25	0	3	-	-	1	5	0	0	3	8	2	-	1	-	-	-	-	0
26	0	4	-	-	-	4	6	1	6	5	2	-	-	-	-	-	1	3
27	1	5	-	-	-	5	4	2	4	9	0	-	-	-	-	-	0	3
28	0	2	-	-	-	5	1	0	7	3	3	-	-	-	-	-	0	1
29	0	3	-	1	-	0	3	3	3	6	2	-	-	-	1	-	1	2
30	0	3	-	2	-	1	4	-	1	6	2	-	-	-	1	-	0	1
31	0	0	-	0	-	1	6	-	1	4	2	-	-	-	1	-	0	4
32	0	2	-	0	-	1	1	-	1	1	0	-	-	-	-	-	1	3
33	1	5	-	1	-	1	0	-	-	1	2	-	-	-	-	-	0	1
34	0	1	-	0	-	-	1	-	-	-	4	-	-	-	-	-	1	2
35	0	2	-	1	-	-	0	-	-	-	0	-	-	-	-	-	-	1
36	0	1	-	1	-	-	0	-	-	-	0	-	-	-	-	-	-	2
37	0	3	-	0	-	-	0	-	-	-	0	-	-	-	-	-	-	0
38	1	3	-	1	-	-	0	-	-	-	0	-	-	-	-	-	-	0
39	-	1	1	1	-	-	1	-	-	-	0	-	-	-	-	-	-	1
40	-	1	0	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
41	-	0	0	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
42	-	0	1	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
43	-	0	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
44	-	0	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
45	-	0	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-
46	-	1	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	-
47	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5	49	2	11	1	49	34	15	88	72	28	10	17	17	3	4	4	31

Appendix table 7. Length-frequency (nos. measured), by haul, of flathead sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.											
	49	50	51	52	53	56	62	66	67	70	71	72
9	-	-	2	-	-	-	-	-	-	-	-	-
10	-	-	2	-	-	-	-	1	-	1	-	-
11	-	-	0	-	-	-	-	0	2	0	-	-
12	-	-	0	-	-	-	-	2	0	0	-	-
13	-	-	0	-	-	-	-	1	1	0	-	-
14	-	-	0	-	-	-	-	0	0	0	-	-
15	-	1	0	-	2	-	-	1	0	0	-	1
16	2	2	2	2	6	-	-	4	1	1	-	1
17	1	2	2	4	10	-	-	1	8	1	1	2
18	3	2	5	7	18	-	-	5	13	-	2	2
19	1	4	1	2	8	-	-	4	7	-	1	0
20	1	0	-	1	4	-	-	1	5	-	0	0
21	2	0	-	1	3	-	-	1	2	-	0	0
22	3	0	-	1	4	-	-	1	2	-	0	3
23	5	0	-	0	5	-	-	0	1	-	0	0
24	3	0	-	0	4	1	-	0	1	-	0	1
25	4	0	-	1	1	0	-	0	0	-	0	1
26	4	0	-	1	3	1	-	2	0	-	0	1
27	5	0	-	4	1	0	-	0	0	-	0	1
28	6	0	-	1	0	0	-	0	1	-	0	5
29	2	0	-	2	2	1	-	0	1	-	1	1
30	2	0	-	2	-	0	1	1	0	-	0	3
31	0	0	-	1	-	1	-	-	0	-	1	2
32	1	0	-	0	-	1	-	-	1	-	-	0
33	1	0	-	0	-	1	-	-	-	-	-	1
34	1	1	-	1	-	0	-	-	-	-	-	2
35	0	-	-	-	-	1	-	-	-	-	-	3
36	0	-	-	-	-	-	-	-	-	-	-	-
37	1	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	-	-	-	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-
Total	48	12	14	31	71	7	1	25	46	3	6	30

Appendix table 8. Length-frequency (nos. measured), by haul, of Pacific sanddab collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	4	18	20	22	23	24	26	31	32	37	38	40	41	42	43	44	45	46
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	1	6	3	2	-	-
13	-	-	-	1	-	-	-	-	-	-	-	-	2	21	8	13	5	-
14	-	-	2	5	-	-	-	-	-	-	-	-	3	19	13	17	2	-
15	-	-	0	12	-	1	1	-	-	1	-	-	3	15	20	26	3	-
16	1	-	2	16	-	1	2	-	-	1	-	-	1	8	6	22	-	-
17	0	-	1	14	-	1	-	-	-	2	-	-	-	8	9	18	-	-
18	0	-	0	4	-	0	-	-	3	2	-	-	-	5	6	9	-	-
19	2	-	0	2	-	0	-	-	3	7	-	-	-	7	8	10	-	-
20	1	-	2	5	2	0	-	-	0	8	-	-	-	3	7	8	-	-
21	6	-	1	6	2	0	-	-	4	20	-	-	-	0	1	6	-	-
22	11	-	2	6	2	0	-	-	4	43	-	-	-	0	7	8	-	-
23	5	-	1	11	2	0	-	-	7	56	-	-	-	1	2	4	-	-
24	7	-	1	6	8	0	-	-	11	75	-	-	-	-	6	7	-	1
25	2	1	3	12	17	0	-	-	22	69	1	-	-	-	3	3	-	-
26	0	0	2	7	22	3	-	-	20	46	2	1	-	-	3	2	-	-
27	1	0	0	3	32	-	-	-	19	40	-	-	-	-	3	2	-	-
28	-	0	0	2	18	-	-	1	19	16	-	-	-	-	0	-	-	-
29	-	2	3	0	19	-	-	-	10	13	-	-	-	-	1	-	-	-
30	-	-	5	1	14	-	-	-	4	4	-	-	-	-	1	-	-	-
31	-	-	2	-	5	-	-	-	1	2	-	-	-	-	-	-	-	-
32	-	-	1	-	3	-	-	-	2	-	-	-	-	-	-	-	-	-
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36	3	28	113	146	6	3	1	129	405	3	1	10	93	107	160	10	1

Appendix table 8. Length-frequency (nos. measured), by haul, of Pacific sanddab collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.										
	47	48	54	60	61	62	63	66	67	69	70
10	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	3	1	-	-	-	-	-	-
12	-	-	-	12	3	-	-	-	-	1	-
13	-	-	-	20	3	-	-	-	-	11	2
14	-	-	5	10	5	-	-	-	-	5	0
15	-	-	11	11	2	-	-	-	-	8	1
16	1	-	3	18	1	-	1	-	-	8	0
17	3	-	9	6	2	-	0	-	-	6	1
18	2	-	20	10	2	1	0	1	-	1	0
19	1	-	29	4	4	0	0	0	-	0	1
20	0	-	37	6	8	0	0	1	-	3	5
21	3	-	52	7	9	0	1	2	-	6	10
22	3	-	98	4	8	1	2	8	1	3	25
23	0	-	128	3	8	2	2	24	1	2	16
24	4	-	176	4	2	1	4	29	9	2	11
25	12	-	133	3	7	0	3	16	7	1	10
26	18	-	94	3	3	4	5	12	3	-	4
27	17	-	79	0	0	1	3	10	16	-	5
28	23	-	69	1	1	-	3	6	22	-	3
29	13	-	23	1	-	-	1	8	5	-	1
30	11	1	5	-	-	-	-	2	3	-	-
31	11	-	-	-	-	-	-	-	-	-	-
32	4	-	-	-	-	-	-	-	-	-	-
33	1	-	-	-	-	-	-	-	-	-	-
Total	127	1	971	126	69	10	25	119	67	57	95

Appendix table 9. Length-frequency (nos. measured), by haul, of rex sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
14	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	0
15	-	0	-	-	-	-	-	-	-	-	2	-	-	-	0	-	-	0
16	-	0	-	-	-	-	-	-	-	-	1	-	-	-	0	-	-	1
17	-	0	-	-	-	-	-	-	-	-	2	-	-	-	0	-	1	1
18	-	0	1	-	-	-	-	-	-	-	0	-	-	-	0	-	3	1
19	-	1	-	-	-	-	-	-	-	-	1	-	-	-	0	-	4	0
20	-	0	-	-	-	-	-	-	-	-	1	-	-	-	2	1	6	1
21	-	0	-	-	-	-	-	-	-	-	0	-	-	-	2	0	8	0
22	-	1	-	-	-	-	1	-	-	-	2	-	-	-	2	0	7	0
23	1	3	-	-	-	-	0	-	2	-	0	-	-	-	0	0	18	2
24	1	0	-	-	-	-	2	1	1	-	1	-	-	-	0	0	37	3
25	1	3	-	-	-	-	6	0	0	-	1	-	-	1	1	0	34	12
26	2	3	-	-	1	-	9	0	2	-	3	-	-	1	0	1	33	18
27	2	0	-	-	0	-	7	0	7	-	0	1	1	1	0	1	46	42
28	2	0	-	-	0	-	7	0	6	2	2	0	0	1	1	0	39	53
29	2	1	-	1	0	1	6	2	14	0	1	0	0	3	1	0	43	72
30	2	2	-	0	0	0	11	5	19	0	3	1	0	1	0	0	27	72
31	2	0	-	0	0	0	5	3	17	1	2	0	0	2	1	0	17	82
32	2	2	-	1	0	1	15	5	16	3	3	0	3	3	1	0	16	64
33	0	1	-	0	0	0	7	3	9	1	4	1	4	8	0	0	12	44
34	1	1	-	0	0	0	10	2	7	2	4	1	3	5	0	0	4	22
35	-	1	-	0	1	1	8	5	5	0	7	0	3	4	2	2	1	16
36	-	0	-	0	-	2	9	5	5	2	7	1	2	7	2	0	1	9
37	-	0	-	0	-	1	10	6	5	0	9	0	1	6	2	3	0	3
38	-	1	-	0	-	0	3	7	4	0	8	1	3	4	5	3	0	3
39	-	-	-	1	-	0	1	4	2	0	7	1	2	5	1	2	0	2
40	-	-	-	-	-	1	7	10	0	0	4	0	3	5	2	1	1	0
41	-	-	-	-	-	2	4	2	0	1	2	2	3	2	2	1	-	0
42	-	-	-	-	-	-	0	0	0	-	-	2	0	2	2	1	-	0
43	-	-	-	-	-	-	0	0	1	-	-	1	0	2	0	1	-	0
44	-	-	-	-	-	-	2	1	-	-	-	0	1	1	0	0	-	1
45	-	-	-	-	-	-	-	0	-	-	-	1	0	0	0	-	-	-
46	-	-	-	-	-	-	-	0	-	-	-	-	1	1	1	-	-	-
47	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Total	18	21	1	3	2	9	130	63	122	12	77	13	30	60	28	16	358 (1369)	525

Appendix table 9. Length-frequency (nos. measured), by haul, of rex sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	20	22	23	24	27	28	29	30	31	32	33	34	36	37	38	39	40	43
11	-	-	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-
12	1	-	-	-	-	1	-	-	-	0	-	-	0	-	-	-	-	-
13	0	-	-	-	-	0	-	-	-	0	-	-	0	1	-	-	-	-
14	1	-	-	-	-	2	-	-	-	0	-	-	0	0	-	-	-	-
15	2	-	-	-	1	0	-	-	-	3	-	-	0	2	-	-	-	-
16	1	-	1	-	13	4	-	1	2	5	-	-	1	1	-	-	-	-
17	9	-	2	-	14	6	3	0	4	7	-	2	1	0	-	-	-	-
18	14	-	4	-	12	15	4	1	6	6	-	5	2	4	-	-	-	-
19	22	-	1	1	8	29	6	1	5	2	1	4	6	0	-	1	-	2
20	32	1	0	0	2	13	3	1	2	7	0	5	1	7	-	0	1	-
21	25	-	2	0	5	4	4	1	4	13	1	3	4	2	-	3	0	-
22	25	-	0	1	16	4	1	6	22	22	0	17	10	16	-	0	0	-
23	45	-	0	-	34	14	3	5	22	3	5	68	24	8	-	0	2	-
24	52	-	1	-	33	25	10	11	24	3	7	78	33	10	1	1	0	-
25	39	-	-	-	20	25	22	6	23	4	12	103	29	12	0	0	1	-
26	33	-	-	-	12	7	22	10	27	10	16	58	11	4	0	4	1	-
27	19	-	-	-	12	12	19	11	23	2	30	65	6	6	0	3	11	-
28	15	-	-	-	21	6	15	7	13	1	45	110	4	2	1	7	25	-
29	4	-	-	-	13	23	17	4	5	1	50	91	19	6	1	14	19	-
30	4	-	-	-	4	13	6	0	1	0	38	77	13	4	0	24	29	-
31	8	-	-	-	5	5	7	0	-	0	14	42	8	0	0	39	32	-
32	11	-	-	-	1	3	3	0	-	0	5	14	2	0	2	42	34	-
33	2	-	-	-	1	1	2	0	-	1	2	10	1	1	0	48	21	-
34	0	-	-	-	2	-	4	0	-	0	4	5	1	0	0	36	13	-
35	1	-	-	-	1	-	1	0	-	1	1	6	-	1	0	34	12	-
36	-	-	-	-	1	-	0	1	-	-	2	4	-	-	2	22	7	-
37	-	-	-	-	0	-	1	-	-	-	0	5	-	-	1	23	3	-
38	-	-	-	-	0	-	-	-	-	-	0	1	-	-	-	12	3	-
39	-	-	-	-	1	-	-	-	-	-	2	1	-	-	-	19	0	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1	-
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	0	-
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	365	1	11	2	232	213	153	66	183	92	235	774	177	87	8	347	216 (652)	2

Appendix table 9. Length-frequency (nos. measured), by haul, of rex sole collected during G.B.RREED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	44	47	48	49	50	51	52	53	54	56	57	58	60	61	62	63	66	67
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	0	-	-	-	-	-	-	-	-	1	-	2	1	1
15	1	-	-	-	0	-	-	1	-	-	-	-	-	1	-	0	4	1
16	1	-	-	-	0	-	-	1	-	-	-	-	-	2	-	1	4	1
17	6	1	2	-	0	-	-	0	-	-	-	-	-	2	-	1	3	0
18	4	4	1	-	0	-	-	1	-	-	-	-	2	3	-	0	5	2
19	3	3	1	-	0	-	-	0	3	-	-	-	1	2	-	0	12	2
20	1	0	4	-	0	-	-	1	2	-	-	-	-	2	-	2	5	3
21	-	1	2	-	0	1	1	4	1	-	-	-	-	0	1	1	17	4
22	-	0	10	1	0	1	0	3	2	-	-	-	-	1	1	0	27	4
23	-	1	28	1	0	1	0	2	0	-	-	1	-	0	2	0	56	4
24	-	1	25	3	0	3	1	10	0	-	-	0	-	0	0	1	70	16
25	-	1	22	1	0	6	5	17	3	1	-	0	-	2	2	1	102	13
26	-	1	12	2	1	4	9	31	0	0	-	0	-	2	1	0	132	17
27	-	1	6	5	1	3	7	17	1	0	-	0	-	4	2	0	108	17
28	-	-	5	7	2	7	7	10	0	2	-	0	-	2	2	1	74	17
29	-	-	13	7	0	1	2	11	1	2	-	0	-	1	1	0	57	18
30	-	-	15	3	0	1	6	11	-	6	-	0	-	0	4	0	37	18
31	-	-	3	5	1	1	6	10	-	12	2	2	-	1	0	0	33	7
32	-	-	5	4	-	2	5	5	-	24	2	0	-	3	1	0	23	6
33	-	-	-	5	-	0	2	4	-	19	1	0	-	2	2	1	13	6
34	-	-	-	6	-	3	2	3	-	19	2	0	-	3	2	1	7	1
35	-	-	-	8	-	-	3	0	-	26	1	1	-	1	-	-	3	1
36	-	-	-	4	-	-	1	0	-	13	1	1	-	2	-	-	1	-
37	-	-	-	2	-	-	4	1	-	3	-	0	-	0	-	-	0	-
38	-	-	-	2	-	-	3	-	-	6	-	1	-	0	-	-	1	-
39	-	-	-	1	-	-	-	-	-	2	-	-	-	0	-	-	0	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	1	-
41	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	16	14	154	67	6	34	64	143	13	135	9	6	3	38	21	12	796 (1291)	159

Appendix table 9. Length-frequency (nos. measured), by haul, of rex sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.				
	68	69	70	71	72
11	-	-	-	-	-
12	-	-	-	-	-
13	-	-	-	-	-
14	-	-	-	-	-
15	-	-	1	-	-
16	-	-	1	-	-
17	-	-	1	-	-
18	-	-	1	-	-
19	-	1	0	-	-
20	-	0	0	-	-
21	-	0	1	-	-
22	-	0	2	-	-
23	-	0	1	1	-
24	-	1	2	1	1
25	-	-	1	6	5
26	-	-	0	4	4
27	1	-	1	3	1
28	2	-	3	3	6
29	0	-	1	2	5
30	0	-	0	4	5
31	1	-	1	5	7
32	3	-	0	3	2
33	2	-	0	4	6
34	2	-	0	3	5
35	5	-	0	0	0
36	3	-	1	2	2
37	-	-	-	1	1
38	-	-	-	-	1
39	-	-	-	-	-
40	-	-	-	-	-
41	-	-	-	-	-
42	-	-	-	-	-
43	-	-	-	-	-
44	-	-	-	-	-
45	-	-	-	-	-
46	-	-	-	-	-
47	-	-	-	-	-
Total	19	2	18	42	51

Appendix table 10. Length-frequency (nos. measured), by haul, of rock sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	4	6	8	9	10	18	19	20	21	22	23	24	26	27	31	34	36	38
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-	1	-	-
16	-	-	-	-	-	-	-	-	-	3	-	-	3	-	-	0	-	-
17	-	-	-	-	-	-	-	-	1	13	2	-	5	1	-	0	-	-
18	1	-	-	-	-	-	-	-	1	5	1	2	7	-	-	1	-	-
19	0	-	-	-	-	-	-	2	1	7	1	1	8	-	-	-	-	-
20	0	-	-	-	-	-	1	2	0	9	1	3	10	-	-	-	-	-
21	0	-	-	-	-	1	0	2	2	11	2	0	10	-	-	-	-	-
22	0	-	-	-	-	0	0	1	2	13	0	3	10	-	-	-	-	-
23	0	-	-	-	-	0	0	2	0	9	1	2	7	-	-	-	-	-
24	0	-	-	-	-	0	0	1	1	6	2	3	9	-	-	-	-	-
25	0	-	-	-	-	0	0	0	1	9	3	2	6	-	-	-	1	-
26	1	-	-	-	-	0	0	0	1	7	2	3	12	-	-	-	-	-
27	0	-	-	-	-	0	0	1	0	7	2	2	7	-	-	-	-	-
28	0	-	-	-	-	0	0	0	1	4	3	3	6	-	-	-	-	-
29	1	-	-	-	-	0	1	0	1	2	0	9	4	-	-	-	-	-
30	0	-	-	-	-	0	0	0	3	6	0	8	3	-	-	-	-	-
31	0	-	-	-	-	1	0	0	6	5	3	5	5	-	-	-	-	-
32	0	-	-	-	-	1	0	1	4	4	0	6	7	-	-	-	-	-
33	0	-	-	-	1	0	0	0	0	10	0	5	9	-	-	-	-	-
34	2	-	-	-	0	0	1	0	3	13	1	10	6	-	-	-	-	1
35	1	-	-	-	1	0	0	3	6	14	2	7	6	-	-	-	-	0
36	0	-	-	-	0	1	0	1	4	17	0	6	2	-	-	-	-	0
37	1	-	-	-	0	4	0	1	2	6	0	3	8	-	1	-	-	1
38	0	-	1	-	0	0	1	0	3	5	1	6	4	-	-	-	-	1
39	0	-	0	-	1	3	-	1	1	6	0	2	3	-	-	-	-	0
40	1	-	0	-	-	1	-	1	3	5	0	1	4	-	-	-	-	0
41	-	-	0	-	-	0	-	0	1	5	0	1	2	-	-	-	-	0
42	-	-	0	-	-	1	-	0	2	1	0	0	0	-	-	-	-	2
43	-	-	1	-	-	1	-	0	1	1	0	1	1	-	-	-	-	0
44	-	1	-	-	-	0	-	1	-	2	1	-	-	-	-	-	-	0
45	-	-	-	-	-	0	-	1	-	0	-	-	-	-	-	-	-	1
46	-	-	-	-	-	0	-	-	-	0	-	-	-	-	-	-	-	-
47	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	8	1	2	1	3	15	4	21	48	212	28	94	165	1	1	2	1	6

Appendix table 10. Length-frequency (nos. measured), by haul, of rock sole collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																
	39	40	41	42	43	44	45	46	47	48	54	60	61	62	68	69	70
12	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	0	0	-	-	-	-	-	-	-	-	1	-
16	-	-	1	-	1	0	0	-	-	-	-	-	-	-	-	0	-
17	-	-	1	-	0	0	0	-	1	-	-	-	-	-	-	2	-
18	-	-	1	-	1	0	1	2	0	-	-	-	-	-	-	1	-
19	-	-	0	-	0	0	3	0	1	2	-	-	-	-	-	1	-
20	-	-	0	-	0	0	2	0	0	0	-	2	-	-	-	0	-
21	-	1	0	-	2	0	0	2	1	1	-	0	-	-	-	0	-
22	-	0	0	-	0	0	1	2	0	0	-	1	-	-	-	1	-
23	-	0	0	-	0	1	1	2	0	0	-	0	-	-	1	0	-
24	-	0	0	-	0	1	1	2	1	0	-	2	-	-	-	0	-
25	-	0	0	-	0	-	2	2	2	0	-	0	-	-	-	2	-
26	-	0	0	-	1	-	0	1	0	0	-	0	-	-	-	0	-
27	-	0	1	-	0	-	0	1	0	0	-	0	-	-	-	0	-
28	-	0	0	1	0	-	0	1	0	0	-	2	-	-	-	1	-
29	-	0	0	0	0	-	0	0	0	0	-	2	-	-	-	0	-
30	-	0	0	0	0	-	0	1	2	0	-	1	-	1	-	0	1
31	-	0	1	0	0	-	1	0	0	0	-	2	-	0	-	3	0
32	-	0	0	1	1	-	1	0	1	0	-	3	-	0	-	1	0
33	-	2	0	-	0	-	0	5	-	0	-	0	-	0	-	1	0
34	1	0	1	-	0	-	0	7	-	0	-	1	-	0	-	2	0
35	0	4	1	-	0	-	1	5	-	0	-	0	-	1	-	0	0
36	1	0	1	-	0	-	1	1	-	1	-	5	-	0	-	2	1
37	1	1	2	-	0	-	1	3	-	-	-	2	3	0	-	2	0
38	0	2	3	-	1	-	2	4	-	-	-	2	2	0	-	0	0
39	0	2	1	-	1	-	1	2	-	-	-	1	0	0	-	3	0
40	0	1	1	-	0	-	0	2	-	-	-	0	0	1	-	0	1
41	0	2	3	-	0	-	1	1	-	-	1	2	1	-	-	2	-
42	0	5	3	-	0	-	1	2	-	-	-	0	0	-	-	0	-
43	0	0	0	-	0	-	2	3	-	-	-	2	0	-	-	1	-
44	1	0	3	-	0	-	1	1	-	-	-	1	0	-	-	3	-
45	-	0	2	-	0	-	0	1	-	-	-	0	0	-	-	2	-
46	-	0	0	-	1	-	1	0	-	-	-	0	0	-	-	0	-
47	-	2	1	-	-	-	-	1	-	-	-	1	0	-	-	2	-
48	-	-	1	-	-	-	-	-	-	-	-	2	1	-	-	1	-
49	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	0	-
50	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Total	4	22	30	2	9	3	26	53	9	4	1	34	7	3	1	36	3

Appendix table 11. Length-frequency (nos. measured), by haul, of Sebastes alutus collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	2	5	10	13	14	16	17	19	27	28	29	30	33	34	37	48	49	50
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
12	-	-	-	-	-	-	-	-	1	-	-	1	-	-	0	-	-	-
13	1	-	-	-	-	-	-	-	2	-	-	0	-	-	1	1	2	1
14	-	-	-	-	-	-	-	-	3	-	-	0	-	2	0	0	1	-
15	-	-	-	-	-	-	-	-	0	-	-	0	-	4	2	0	2	-
16	-	-	-	-	-	-	-	-	3	-	-	0	1	1	-	0	2	-
17	-	-	-	-	-	-	-	-	5	-	-	1	0	5	-	0	2	-
18	-	-	-	-	-	-	-	-	5	1	-	-	1	11	-	0	4	-
19	-	-	-	2	-	-	-	-	11	3	-	-	6	7	-	0	3	-
20	-	-	-	3	4	-	-	-	8	4	-	-	3	16	-	1	3	-
21	-	-	-	5	1	-	-	-	8	3	1	-	6	5	-	-	1	-
22	-	-	-	4	1	-	1	-	2	0	1	-	8	2	-	-	0	-
23	-	-	-	7	3	1	0	-	-	3	0	-	10	0	-	-	3	-
24	-	-	-	3	2	-	0	-	-	-	0	-	14	0	-	-	0	-
25	-	-	-	1	1	-	0	-	-	-	0	-	9	0	-	-	0	-
26	-	-	-	4	0	-	0	-	-	-	0	-	5	0	-	-	2	-
27	-	-	-	3	0	-	0	-	-	-	0	-	0	1	-	-	0	-
28	-	-	-	3	1	-	0	-	-	-	0	-	1	-	-	-	0	-
29	-	-	-	5	0	-	0	1	-	-	0	-	1	-	-	-	0	-
30	-	2	-	8	1	-	1	-	-	-	1	-	1	-	-	-	0	-
31	-	0	-	6	1	-	0	-	-	-	-	-	0	-	-	-	0	-
32	-	2	-	2	-	-	1	-	-	-	-	-	1	-	-	-	0	-
33	-	0	-	2	-	-	0	-	-	-	-	-	-	-	-	-	0	-
34	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	0	-
35	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	0	-
36	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	0	-
37	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	0	-
38	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	0	-
39	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	0	-
40	-	0	1	-	-	-	0	-	-	-	-	-	-	-	-	-	0	-
41	-	0	-	-	-	-	1	-	-	-	-	-	-	-	-	-	0	-
42	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
43	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	7	1	58	15	1	4	1	48	14	3	2	66	54	4	2	26	1

Appendix table 11. Length-frequency (nos. measured), by haul, of Sebastes alutus collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.								
	51	52	56	61	62	63	66	71	72
8	-	-	-	-	1	-	-	-	-
9	-	-	-	-	0	-	-	-	-
10	1	-	-	-	0	-	-	-	-
11	0	1	-	-	0	8	-	-	-
12	2	1	-	1	2	15	-	1	1
13	1	6	-	-	1	12	-	3	1
14	0	2	-	-	1	8	1	2	2
15	0	4	-	-	0	-	-	-	3
16	1	4	-	-	1	-	-	-	0
17	-	8	-	-	-	-	-	-	4
18	-	14	-	-	-	-	-	-	5
19	-	24	4	-	-	-	-	-	2
20	-	23	2	-	-	-	-	-	1
21	-	33	11	-	-	-	-	-	1
22	-	21	13	-	-	-	-	-	1
23	-	25	20	-	-	-	-	-	0
24	-	14	23	-	-	-	-	-	0
25	-	7	21	-	-	-	-	-	0
26	-	4	15	-	-	-	-	-	0
27	-	4	5	-	-	-	-	-	1
28	-	4	5	-	-	-	-	-	-
29	-	0	0	-	-	-	-	-	-
30	-	1	0	-	-	-	-	-	-
31	-	-	1	-	-	-	-	-	-
32	-	-	0	-	-	-	-	-	-
33	-	-	0	-	-	-	-	-	-
34	-	-	0	-	-	-	-	-	-
35	-	-	0	-	-	-	-	-	-
36	-	-	0	-	-	-	-	-	-
37	-	-	0	-	-	-	-	-	-
38	-	-	0	-	-	-	-	-	-
39	-	-	0	-	-	-	-	-	-
40	-	-	0	-	-	-	-	-	-
41	-	-	1	-	-	-	-	-	-
42	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-
Total	5	200	121	1	6	43	1	6	22

Appendix table 12. Length-frequency (nos. measured), by haul, of Sebastes brevispinus collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.															
	1	2	6	7	11	13	14	20	30	33	49	62	63	70	71	72
38	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-
41	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-
42	1	-	-	1	-	-	2	-	1	-	-	-	-	-	-	-
43	1	-	-	0	2	2	0	1	-	-	-	-	-	-	-	1
44	1	-	2	0	-	0	1	-	-	-	-	-	-	.	.	1
45	1	-	0	0	-	4	1	-	-	-	-	1	-	-	-	1
46	1	-	0	1	-	1	1	-	-	-	1	1	1	-	-	3
47	1	-	1	-	-	0	2	-	-	-	3	0	0	-	-	0
48	1	-	-	-	-	0	0	-	-	1	0	1	0	-	-	4
49	6	-	-	-	-	0	1	-	-	-	0	0	2	-	-	7
50	4	-	-	-	-	0	-	-	-	-	0	1	0	1	2	7
51	2	1	-	-	-	0	-	-	-	-	0	3	0	0	1	18
52	7	1	-	-	-	0	-	-	-	-	0	4	0	2	1	25
53	10	1	-	-	.	1	-	-	-	-	1	4	1	6	1	20
54	4	1	-	-	-	1	-	-	-	-	0	3	1	3	0	9
55	4	0	-	-	-	-	-	-	-	-	0	1	0	6	1	3
56	0	1	-	-	-	-	-	-	-	-	1	1	1	3	1	0
57	1	1	-	-	-	-	-	-	-	-	-	1	-	1	-	1
58	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	1
59	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	0
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Total	45	7	3	2	2	9	9	1	1	1	6	21	6	22	7	102

Appendix table 13. Length-frequency (nos. measured), by haul, of Sebastes paucispinus collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.									
	2	5	13	14	29	33	34	36	49	72
50	-	-	-	-	-	-	1	-	-	-
51	-	-	-	-	-	-	0	-	-	-
52	-	-	-	-	-	-	0	-	-	-
53	-	-	-	-	-	-	0	-	-	-
54	-	-	-	-	-	-	0	-	-	-
55	-	-	-	-	-	-	0	-	-	-
56	-	-	-	-	-	-	0	-	-	-
57	-	-	-	-	-	-	0	-	-	-
58	-	-	-	1	-	-	0	-	-	-
59	-	-	-	0	-	-	0	-	-	-
60	-	-	-	1	-	-	0	-	-	-
61	-	-	-	2	-	-	0	-	-	-
62	-	-	-	2	-	-	0	-	-	-
63	-	-	-	10	-	-	0	-	-	-
64	-	-	-	8	1	-	0	-	-	-
65	-	-	-	13	0	-	0	-	1	-
66	1	-	-	18	0	-	0	-	-	-
67	0	-	-	20	0	-	0	-	-	-
68	0	-	-	23	0	-	0	-	-	-
69	1	-	-	21	1	-	1	-	-	-
70	1	-	-	9	-	-	0	-	-	-
71	1	-	1	12	-	-	0	-	-	-
72	-	-	-	3	-	-	0	-	-	-
73	-	-	-	4	-	-	0	-	-	1
74	-	-	-	9	-	-	0	-	-	-
75	-	-	-	6	-	-	0	-	-	-
76	-	-	-	0	-	-	1	-	-	-
77	-	-	-	1	-	-	0	-	-	-
78	-	-	-	3	-	-	0	-	-	-
79	-	-	-	2	-	-	0	-	-	-
80	-	-	-	1	-	-	0	-	-	-
81	-	-	-	0	-	-	0	-	-	-
82	-	-	-	1	-	1	0	-	-	-
83	-	-	-	0	-	-	1	-	-	-
84	-	1	-	0	-	-	-	-	-	-
85	-	-	-	0	-	-	-	1	-	-
86	-	-	-	1	-	-	-	-	-	-
Total	4	1	1	171	2	1	4	1	1	1

Appendix table 14. Length-frequency (nos. measured), by haul, of Sebastes pinniger collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.								
	1	2	7	8	14	33	49	71	72
42	-	-	-	-	2	-	-	-	-
43	-	-	-	-	2	-	-	-	-
44	-	-	-	-	3	1	-	-	-
45	-	-	-	-	4	-	-	1	3
46	-	-	-	-	13	-	-	0	2
47	-	-	2	-	17	-	-	0	0
48	-	-	-	-	16	-	-	0	2
49	1	1	-	-	19	-	1	1	3
50	2	-	-	-	19	-	1	0	1
51	-	-	-	-	10	-	0	0	1
52	-	-	-	1	5	-	0	0	3
53	-	-	-	-	10	-	1	0	0
54	-	-	-	-	1	-	0	1	1
55	-	-	-	-	1	-	0	-	1
56	-	-	-	-	4	-	0	-	-
57	-	-	-	-	0	-	0	-	-
58	-	-	-	-	0	-	0	-	-
59	-	-	-	-	1	-	1	-	-
Total	3	1	2	1	127	1	4	3	17

Appendix table 15. Length-frequency (nos. measured), by haul, of Pacific cod collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	1	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	21	22
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
30	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	0
31	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0
32	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0
33	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	0
34	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	1
35	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	1
36	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	3
37	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	1	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	0	-	-
40	-	-	1	-	-	-	1	-	-	-	-	-	-	0	2	2	-	-
41	-	-	0	-	-	-	0	-	-	-	-	-	-	1	2	2	-	-
42	-	-	0	1	-	-	0	1	-	1	-	1	-	1	1	2	-	-
43	-	-	0	0	-	1	0	0	-	0	-	0	-	0	0	0	-	-
44	-	-	0	2	-	0	2	0	-	0	-	1	1	2	0	3	-	-
45	-	-	0	0	-	2	0	0	-	0	-	2	0	1	1	1	-	-
46	-	-	0	1	-	1	2	0	-	1	-	0	2	1	0	1	-	-
47	-	1	0	0	-	2	0	1	-	0	-	2	0	2	0	3	-	-
48	-	-	0	2	-	2	1	2	2	2	-	1	1	-	2	0	-	-
49	-	-	0	2	-	0	0	0	0	1	-	1	0	-	4	1	-	-
50	-	-	0	0	-	0	0	1	1	0	-	0	0	-	1	0	-	-
51	-	-	0	2	-	1	0	-	0	0	-	1	0	-	0	1	-	-
52	-	-	1	0	-	0	0	-	0	0	-	0	0	-	1	-	-	-
53	-	-	0	0	-	0	0	-	0	0	-	0	0	-	0	-	-	-
54	-	-	0	0	-	1	0	-	1	0	-	0	0	-	1	-	-	-
55	-	-	0	1	-	0	0	-	-	1	-	0	0	-	0	-	-	-
56	-	-	0	1	-	0	0	-	-	-	-	0	0	-	0	-	-	-
57	-	-	0	0	-	0	0	-	-	-	-	0	0	-	0	-	-	-
58	-	-	0	0	-	0	0	-	-	-	-	0	0	-	0	-	-	-
59	-	-	0	0	-	0	0	-	-	-	-	1	0	-	2	-	-	-
60	-	-	0	0	-	0	0	-	-	-	-	0	0	-	0	-	-	-
61	-	-	1	0	-	0	0	-	-	-	-	0	0	-	1	-	-	-
62	-	-	-	0	-	0	0	-	-	-	-	0	0	-	0	-	-	-
63	-	-	-	0	-	1	0	-	-	-	1	0	0	-	0	-	-	-
64	-	-	-	0	-	1	0	-	-	-	0	0	0	-	1	-	-	-
65	-	-	-	0	-	0	0	-	-	-	0	0	0	-	0	-	-	-
66	-	-	-	0	-	0	0	-	-	-	0	0	0	-	0	-	-	-
67	-	-	-	0	-	0	0	-	-	-	0	0	0	-	0	-	-	-
68	-	-	-	0	-	0	0	-	-	-	1	0	1	-	0	-	1	-
69	-	-	-	0	-	0	0	-	-	-	-	1	0	-	2	-	-	-
70	-	-	-	0	-	0	0	-	-	-	-	0	0	-	0	-	-	-
71	-	-	-	0	-	1	0	-	-	-	-	1	0	-	0	-	-	-
72	1	-	-	0	-	-	1	-	-	-	-	0	1	-	0	-	-	-
73	-	-	-	1	-	-	-	-	-	-	-	0	0	-	0	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	0	1	-	0	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	0	-	-	2	-	-	-
76	-	-	-	-	1	-	-	-	-	-	-	1	-	-	0	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Total	1	1	3	13	1	13	7	5	4	6	2	13	5	9	26	17	1	11

Appendix table 15. Length-frequency (nos. measured), by haul, of Pacific cod collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	23	24	26	27	28	29	30	31	32	33	34	36	37	38	40	43	44	47
20	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
24	-	1	0	-	-	-	-	1	-	-	-	-	-	-	-	-	-	0
25	1	1	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	2
26	1	0	0	-	-	-	-	0	-	-	-	-	-	-	-	1	-	1
27	0	1	0	-	-	-	-	0	-	-	-	-	-	-	-	1	-	3
28	1	0	0	-	1	-	-	0	-	-	-	-	-	-	-	0	-	3
29	0	0	0	-	0	-	-	0	-	-	-	-	-	-	-	0	-	2
30	0	0	0	-	0	-	-	0	-	-	-	-	-	-	-	0	1	1
31	0	0	0	-	0	-	-	0	-	-	-	-	-	-	-	0	-	1
32	0	0	1	-	0	-	-	0	-	-	-	-	-	-	-	0	-	0
33	0	0	-	-	0	-	-	0	-	-	-	-	-	-	-	0	-	1
34	0	0	-	-	0	-	-	0	1	1	-	-	-	-	-	0	-	1
35	1	0	-	-	0	-	-	0	-	0	-	-	-	-	1	0	-	1
36	0	0	-	-	0	-	-	0	-	0	-	-	-	-	0	0	-	1
37	0	0	-	-	0	-	-	0	-	0	1	-	-	-	0	0	-	1
38	0	0	-	-	0	-	-	0	-	1	0	-	-	-	0	0	-	1
39	0	1	-	-	0	-	-	1	-	0	1	-	-	-	0	0	-	2
40	0	-	-	-	1	-	-	-	-	0	0	1	1	-	0	1	-	2
41	0	-	-	-	0	-	1	-	-	0	0	0	1	-	1	0	-	3
42	0	-	-	-	0	-	0	-	-	1	0	1	0	-	0	1	-	3
43	0	-	-	-	0	-	0	-	-	1	1	0	0	-	0	1	-	1
44	0	-	-	-	0	-	1	-	-	2	0	1	1	-	1	0	-	2
45	0	-	-	-	0	1	0	-	-	1	0	0	0	-	1	0	-	2
46	0	-	-	-	1	0	0	-	-	1	1	0	4	-	0	2	-	1
47	0	-	-	1	0	0	2	-	-	0	0	0	2	-	0	1	-	4
48	0	-	-	-	2	0	0	-	-	0	0	0	1	-	1	0	-	2
49	0	-	-	-	0	0	0	-	-	1	0	0	1	-	0	0	-	2
50	0	-	-	-	1	0	0	-	-	1	0	0	1	-	1	0	-	5
51	0	-	-	-	0	0	0	-	-	1	0	0	2	-	0	0	-	3
52	0	-	-	-	0	1	0	-	-	0	0	0	0	-	0	1	-	2
53	0	-	-	-	0	0	0	-	-	0	1	0	0	-	0	0	-	1
54	0	-	-	-	0	1	2	-	-	0	1	1	1	-	0	0	-	1
55	0	-	-	-	0	0	-	-	-	0	0	1	0	-	0	0	-	1
56	0	-	-	-	0	0	-	-	-	0	1	0	1	-	0	0	-	0
57	0	-	-	-	0	0	-	-	-	0	0	1	0	-	0	0	-	1
58	0	-	-	-	0	0	-	-	-	0	0	0	0	-	1	0	-	2
59	0	-	-	-	1	0	-	-	-	1	0	0	0	-	0	0	-	1
60	0	-	-	-	0	0	-	-	-	0	0	1	0	-	1	0	-	1
61	0	-	-	-	0	0	-	-	-	0	1	0	1	-	0	0	-	0
62	0	-	-	-	0	0	-	-	-	0	-	1	-	-	0	0	-	1
63	0	-	-	-	0	0	-	-	-	0	-	0	-	-	1	0	-	0
64	0	-	-	-	0	0	-	-	-	0	-	0	-	1	1	0	-	1
65	0	-	-	-	0	0	-	-	-	1	-	0	-	-	0	0	-	3
66	0	-	-	-	1	1	-	-	-	0	-	0	-	-	0	1	-	1
67	0	-	-	-	-	-	-	-	-	0	-	0	-	-	0	-	-	0
68	0	-	-	-	-	-	-	-	-	0	-	1	-	-	0	-	-	0
69	1	-	-	-	-	-	-	-	-	2	-	-	-	-	0	-	-	0
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	1
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	1
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5	4	3	1	8	4	6	2	1	15	8	9	16	1	11	9	1	69

Appendix table 15. Length-frequency (nos. measured), by haul, of Pacific cod collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.															
	48	49	50	52	57	58	60	61	62	66	67	68	69	70	71	72
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	0	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
36	0	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
37	0	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
38	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-
39	0	-	-	-	-	-	0	-	-	-	-	-	0	-	1	-
40	0	-	-	-	-	1	0	-	1	-	-	-	0	-	0	-
41	1	-	-	-	1	1	0	-	0	-	-	-	0	-	0	-
42	0	-	-	-	1	0	0	-	1	-	-	-	0	-	0	-
43	0	1	-	-	0	0	0	-	0	-	-	-	0	-	0	-
44	0	1	-	-	0	0	0	-	1	-	-	-	0	-	1	-
45	0	0	1	-	0	1	0	-	0	-	-	-	0	1	-	-
46	0	0	0	-	1	0	0	-	0	-	-	1	0	0	-	-
47	1	0	0	-	0	0	1	-	1	-	-	1	1	1	-	-
48	0	0	0	-	1	2	1	-	0	-	-	0	0	1	-	-
49	2	1	0	-	1	-	-	-	1	-	-	0	1	-	-	2
50	0	2	0	-	2	-	-	-	0	-	-	0	-	-	-	0
51	0	1	0	-	1	-	-	-	0	-	-	0	-	-	-	0
52	1	0	0	-	0	-	-	-	0	-	-	1	-	-	-	0
53	1	0	0	-	0	-	-	-	0	-	-	-	-	-	-	0
54	2	0	0	-	0	-	-	-	1	-	-	-	-	-	-	0
55	0	1	0	-	0	-	-	-	0	-	-	-	-	-	-	0
56	0	0	0	-	0	-	-	-	0	-	-	-	-	-	-	0
57	0	0	0	-	0	-	-	-	0	-	1	-	-	-	-	0
58	0	0	0	-	0	-	-	-	0	-	-	-	-	-	-	0
59	0	0	0	-	0	-	-	-	0	-	-	-	-	-	-	0
60	1	0	0	-	0	-	-	1	0	1	-	-	-	-	-	0
61	0	0	0	-	0	-	-	-	0	-	-	-	-	-	-	0
62	0	0	0	-	0	-	-	-	0	-	-	-	-	-	-	0
63	0	0	0	-	0	-	-	-	2	-	-	-	-	-	-	0
64	0	0	1	-	1	-	-	-	-	-	-	-	-	-	-	0
65	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	0
66	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	0
67	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	0
68	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	1
69	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-
71	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-
76	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	11	9	4	1	9	5	3	1	8	1	1	3	5	3	2	3

Appendix table 16. Length-frequency (nos. measured), by haul, of sablefish collected during G.B.RFD Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	1	2	7	8	9	11	12	13	14	15	16	17	18	19	20	22	23	24
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1	-
28	-	-	-	-	-	-	-	-	-	-	-	-	1	-	0	1	2	-
29	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1	0	2	-
30	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	0	8	-
31	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	2	18	-
32	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	0	26	1
33	-	-	-	-	1	-	-	-	-	-	-	-	3	-	-	2	19	1
34	1	1	-	-	0	2	-	-	-	-	-	-	1	-	-	1	17	0
35	-	0	-	1	0	1	-	-	-	-	-	-	1	1	-	0	14	0
36	-	0	-	1	0	1	-	-	-	1	-	-	2	0	-	1	15	0
37	-	0	-	-	0	0	-	1	-	1	1	1	1	0	-	-	5	1
38	-	0	1	-	0	0	-	0	-	0	1	2	2	0	-	-	5	-
39	-	0	1	-	0	0	-	0	-	0	0	1	1	0	-	-	2	-
40	-	0	-	-	0	1	-	1	-	0	0	0	-	0	-	-	1	-
41	-	1	-	-	0	-	-	1	-	1	0	0	-	0	-	-	-	-
42	-	-	-	-	0	-	-	0	-	0	0	0	-	0	-	-	-	-
43	-	-	-	-	0	-	-	1	-	0	0	0	-	0	-	-	-	-
44	-	-	-	-	0	-	-	2	1	0	0	0	-	0	-	-	-	-
45	-	-	-	-	1	-	-	1	0	1	0	0	-	0	-	-	-	-
46	-	-	-	-	-	-	-	-	0	1	0	0	-	0	-	-	-	-
47	-	-	-	-	-	-	-	-	1	0	1	0	-	1	-	-	-	-
48	-	-	-	-	-	-	-	-	-	0	0	0	-	1	-	-	-	-
49	-	-	-	-	-	-	-	-	-	0	0	1	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	0	0	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	0	0	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	1	0	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
55	-	-	-	-	-	-	1	-	-	-	0	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Total	1	2	2	2	2	5	1	7	2	6	4	5	18	3	17	8	135	3

Appendix table 16. Length-frequency (nos. measured), by haul, of sablefish collected during G.B.NERD Groundfish Cruise No. 84-3, May 24-June 14,1984. (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	26	27	28	29	30	31	32	33	34	36	37	38	40	47	48	49	50	52
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	1	-	-	-	2	-	-	-	-	-	-	-	1	-	-	-	-
29	-	2	-	-	-	2	-	-	-	-	-	-	-	5	-	-	-	-
30	-	4	1	-	-	3	3	-	-	-	-	-	-	9	1	-	-	-
31	1	2	1	-	-	0	1	-	-	-	-	-	-	32	2	-	-	-
32	-	2	0	-	1	3	2	-	-	-	-	1	1	40	6	1	-	-
33	-	3	1	-	-	1	2	-	-	-	1	0	0	48	5	1	-	1
34	-	3	0	-	-	2	0	-	-	-	0	0	0	71	7	0	-	0
35	-	1	1	-	-	0	1	-	-	-	0	0	0	61	8	1	-	0
36	-	1	1	2	-	1	-	-	-	-	1	0	0	42	4	0	-	3
37	-	2	0	1	-	1	-	-	-	1	-	0	2	33	8	0	-	4
38	-	1	1	4	-	-	-	-	-	0	-	0	-	14	2	1	-	2
39	-	0	-	1	-	-	-	-	-	0	-	1	-	5	0	1	1	0
40	-	0	-	1	-	-	-	-	-	0	-	-	-	5	1	0	-	0
41	-	1	-	2	-	-	-	2	-	0	-	-	-	2	1	0	-	1
42	-	-	-	0	-	-	-	-	-	0	-	-	-	1	0	0	-	1
43	-	-	-	0	-	-	-	-	1	1	-	-	-	1	0	0	-	0
44	-	-	-	1	-	-	-	-	-	-	-	-	-	0	0	0	-	0
45	-	-	-	0	-	-	-	-	-	-	-	-	-	0	0	0	-	0
46	-	-	-	0	-	-	-	-	-	-	-	-	-	0	0	0	-	0
47	-	-	-	0	-	-	-	-	-	-	-	-	-	1	0	0	-	0
48	-	-	-	0	-	-	-	-	-	-	-	-	-	-	0	1	-	0
49	-	-	-	1	-	-	-	-	-	-	-	-	-	-	0	-	-	0
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	0
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	23	6	13	1	15	9	2	1	2	2	2	3	371 (1121)	46	6	1	13

Appendix table 16. Length-frequency (nos. measured), by haul, of sablefish collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.													
	53	54	55	56	58	60	61	62	63	67	68	69	70	71
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	1	-	-	-	1	-	1	-	-	-	-
32	1	2	-	0	-	-	-	0	-	-	-	-	1	-
33	0	1	-	0	-	-	5	0	2	-	-	-	0	-
34	2	1	-	0	1	-	0	0	2	-	2	-	0	-
35	1	-	1	0	1	1	2	1	2	-	2	1	0	-
36	0	-	0	0	1	-	1	1	3	-	0	0	1	2
37	0	-	1	2	-	-	1	1	2	-	1	1	1	-
38	1	-	-	1	-	-	-	-	1	-	0	-	-	-
39	-	-	-	-	-	-	-	-	-	-	1	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5	4	2	4	3	1	9	4	12	1	6	2	3	2

Appendix table 17. Length-frequency (nos. measured), by haul, of walleye pollock collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																		
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	27	28	29
16	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-
17	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	3	2	-	-
18	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	9	5	1	-
19	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	7	2	0	-
20	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	3	3	0	-
21	-	-	-	-	-	-	-	-	-	-	-	0	-	1	-	3	0	0	-
22	-	-	-	1	-	-	-	-	-	-	-	0	-	0	-	1	0	0	-
23	-	-	-	0	-	-	-	-	-	-	-	0	-	0	-	0	0	0	-
24	-	-	-	0	-	-	-	-	-	-	-	0	-	0	-	0	0	0	-
25	-	-	-	0	-	1	-	-	-	-	-	0	-	1	-	0	2	0	-
26	-	-	-	0	-	0	-	-	-	-	-	0	-	1	-	2	0	2	-
27	-	-	-	0	-	0	1	-	-	-	-	0	-	1	-	2	1	2	-
28	-	1	-	0	-	0	1	-	-	-	-	0	-	1	-	1	0	1	-
29	-	1	-	0	-	0	1	-	-	-	1	0	-	2	-	3	1	4	1
30	-	0	-	0	1	1	0	-	-	-	0	0	-	1	-	4	0	1	0
31	-	0	1	0	0	0	1	-	2	-	0	1	-	1	-	5	0	-	0
32	-	4	0	1	0	0	1	-	0	-	1	0	-	1	-	2	0	-	0
33	1	1	0	0	1	0	0	-	0	-	4	0	-	0	-	1	0	-	0
34	0	0	0	0	1	0	1	-	0	2	0	0	-	1	1	1	0	-	0
35	0	2	0	0	0	0	1	-	1	2	1	0	-	0	0	-	0	-	0
36	0	0	1	0	0	0	-	-	0	0	0	0	-	2	0	-	0	-	0
37	0	0	0	0	0	0	-	-	1	0	1	0	-	0	0	-	0	-	0
38	0	0	0	0	0	0	-	-	0	0	0	0	-	0	0	-	0	-	1
39	0	0	0	0	0	0	-	-	3	1	0	0	-	0	0	-	0	-	3
40	0	0	0	0	0	1	-	-	2	0	0	0	-	1	0	-	1	-	3
41	0	1	0	0	0	-	-	-	5	1	1	0	-	0	0	-	0	-	0
42	0	0	0	0	0	-	-	-	4	0	0	0	-	0	1	-	0	-	2
43	0	0	1	0	0	-	-	-	3	1	0	0	-	0	1	-	0	-	1
44	1	0	-	0	0	-	-	-	4	0	1	0	-	0	1	-	0	-	2
45	1	0	-	0	0	-	-	1	4	0	2	0	-	0	0	-	0	-	2
46	1	0	-	0	0	-	-	0	4	0	0	0	-	0	0	-	0	-	3
47	0	0	-	1	0	-	-	0	0	1	0	0	-	0	2	-	0	-	2
48	0	0	-	-	1	-	-	0	0	0	0	0	-	0	1	-	0	-	1
49	1	0	-	-	0	-	-	0	3	0	0	0	-	0	0	-	0	-	4
50	1	0	-	-	0	-	-	2	0	0	2	0	-	0	1	-	1	-	1
51	0	0	-	-	0	-	-	0	4	1	0	0	-	0	0	-	-	-	3
52	1	1	-	-	0	-	-	2	0	0	1	0	-	0	0	-	-	-	1
53	0	0	-	-	0	-	-	0	1	0	0	0	-	0	0	-	-	-	1
54	1	0	-	-	0	-	-	0	1	0	0	0	-	0	0	-	-	-	0
55	3	0	-	-	0	-	-	1	2	2	0	2	-	0	0	-	-	-	0
56	2	0	-	-	0	-	-	1	-	1	0	0	1	0	2	-	-	-	2
57	0	0	-	-	0	-	-	2	-	2	0	1	1	0	0	-	-	-	0
58	0	0	-	-	1	-	-	0	-	2	1	-	0	1	0	-	-	-	1
59	1	1	-	-	0	-	-	0	-	5	-	-	0	-	0	-	-	-	0
60	-	-	-	-	0	-	-	0	-	1	-	-	1	-	0	-	-	-	1
61	-	-	-	-	1	-	-	1	-	1	-	-	-	-	0	-	-	-	0
62	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-	-	1
63	-	-	-	-	2	-	-	-	-	0	-	-	-	-	1	-	-	-	0
64	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	0
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Total	14	12	3	3	8	3	7	10	44	25	16	5	3	15	11	47	19	11	41

Appendix table 17. Length-frequency (nos. measured), by haul, of walleye pollock collected during G.B.RED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.																	
	30	31	33	34	36	37	39	40	48	49	52	58	61	62	63	67	70	71
16	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	4	0	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
18	2	1	-	-	1	1	-	-	3	-	-	-	-	-	-	-	3	-
19	2	-	-	-	2	0	-	-	4	-	-	-	1	1	1	-	2	-
20	-	-	-	-	4	1	-	-	9	-	-	1	1	1	0	-	2	1
21	-	-	-	-	11	-	-	-	10	-	-	-	1	0	0	-	1	-
22	-	-	-	-	3	-	-	-	2	-	-	-	1	0	0	-	0	-
23	-	-	-	-	3	-	-	-	3	-	-	-	0	0	0	-	1	-
24	-	-	-	1	0	-	-	-	3	-	-	-	0	1	0	-	-	-
25	-	-	-	0	4	-	-	-	0	-	-	-	1	2	0	-	-	-
26	-	-	-	0	2	-	-	-	2	-	-	-	-	2	1	-	-	-
27	-	-	-	1	8	-			0	-	-	-	-	1	-	-	-	-
28	-	-	-	8	9	-		-	2	-	-	-	-	0	-	1	-	-
29	-	-	-	13	5	-		-	1	-	-	-	-	0	-	-	-	-
30	-	-	-	16	4	-		-	5	-	1	-	-	0	-	-	-	-
31	-	-	-	22	4	-	-	-	1	1	0	-	-	0	-	-	-	-
32	-	-	-	41	-	-	-	-	2	0	1	-	-	0	-	-	-	-
33	-	-	-	34	-	-	-	-	2	1	-	-	-	1	-	-	-	-
34	-	-	1	24	-	-	-	-	2	0	-	-	-	-	-	-	-	-
35	-	-	0	20	-	-	-	-	-	0	-	-	-	-	-	-	-	-
36	-	-	0	14	-	-	-	-	-	0	-	-	-	-	-	-	-	-
37	-	-	0	7	-	-	-	-	-	0	-	-	-	-	-	-	-	-
38	-	-	1	2	-	-	-	-	-	0	-	-	-	-	-	-	-	-
39	-	-	3	7	-	-	-	1	-	1	-	-	-	-	-	-	-	-
40	-	-	3	3	-	-	-	-	-	0	-	-	-	-	-	-	-	-
41	-	-	4	5	-	-	-	-	-	0	-	-	-	-	-	-	-	-
42	-	-	14	1	-	-	-	-	-	0	-	-	-	-	-	-	-	-
43	-	-	18	1	-	-	-	-	-	0	-	-	-	-	-	-	-	-
44	-	-	21	0	-	-	-	-	-	1	-	-	-	-	-	-	-	-
45	-	-	16	0	-	-	-	-	-	0	-	-	-	-	-	-	-	-
46	-	-	17	0	-	-	-	-	-	1	-	-	-	-	-	-	-	-
47	-	-	5	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
48	-	-	12	0	-	-	-	-	-	1	-	-	-	-	-	-	-	-
49	-	-	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	0	-	-	1	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	9	2	135	223	60	2	1	1	54	7	2	1	5	9	2	1	9	1

Appendix table 18. Length-frequency (nos. measured), by haul, of eulachon collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length (cm)	Haul no.									
	16	23	29	30	31	36	50	51	52	53
10	1	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	1	-
13	-	-	1	-	-	-	-	5	7	-
14	-	-	3	-	-	-	2	27	32	4
15	-	-	5	2	3	-	10	54	44	2
16	-	-	4	1	2	1	17	42	35	4
17	-	1	1	3	1	-	4	16	7	-
18	-	-	-	0	1	-	2	4	-	-
19	-	-	-	0	-	-	-	-	-	-
20	-	-	-	1	-	-	-	-	-	-
Total	1	1	14	7	7	1	35	148	126	10

Appendix table 19a. Length-frequency (nos. measured), by haul, of ratfish collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Does not include fish with broken tails - see Appendix Table 19b.) (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	1	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22
13	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	0	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
15	0	-	-	-	-	-	-	-	-	-	-	0	-	1	-	-	-	-
16	0	-	-	-	-	-	-	-	-	-	-	0	-	0	-	-	-	-
17	0	-	-	-	-	-	-	-	-	-	-	1	-	0	-	-	-	-
18	0	-	-	-	-	-	-	-	-	-	1	0	-	0	-	-	-	-
19	0	-	-	-	-	-	-	-	-	-	0	0	-	0	-	-	-	-
20	0	-	-	-	-	-	2	-	-	-	0	0	-	1	1	-	-	-
21	0	-	-	-	1	-	0	-	-	-	0	0	-	0	0	-	-	-
22	0	-	-	-	0	-	0	-	-	-	0	0	1	2	0	-	-	-
23	0	-	-	-	0	-	0	-	-	-	0	0	1	2	0	-	-	-
24	0	-	-	-	1	-	1	-	-	-	0	0	0	1	0	-	-	-
25	0	-	-	-	2	-	0	-	-	-	0	2	2	1	0	-	-	-
26	0	-	-	-	1	-	0	-	-	-	0	0	0	2	0	-	-	-
27	1	-	-	-	8	-	1	-	-	-	0	0	1	0	0	1	-	-
28	0	-	-	-	14	-	1	-	-	1	0	0	0	0	0	0	-	-
29	0	-	-	-	14	-	1	-	-	0	2	0	0	0	0	3	-	-
30	0	-	-	-	28	-	4	-	-	1	0	0	0	0	0	4	-	-
31	0	-	-	-	39	-	2	-	-	0	0	1	0	0	0	7	-	-
32	0	-	-	-	34	-	4	-	-	0	0	0	0	1	0	7	-	-
33	0	-	-	-	41	-	5	-	-	4	0	0	0	0	0	5	-	-
34	0	-	-	-	34	-	6	-	-	0	1	0	0	0	0	4	1	-
35	0	-	-	-	41	-	3	-	-	0	1	0	0	0	2	6	0	-
36	0	-	-	-	29	1	4	-	-	1	2	0	0	0	0	9	0	-
37	0	-	-	-	26	0	6	-	-	0	0	1	0	0	1	6	0	-
38	0	-	-	-	18	0	3	-	-	0	1	0	0	0	0	8	0	-
39	1	-	-	-	13	0	3	-	-	1	1	1	0	0	0	1	0	-
40	0	-	-	-	17	1	1	-	-	0	2	1	0	0	0	2	0	-
41	1	-	-	-	15	5	6	-	-	0	0	0	0	1	0	0	0	-
42	0	-	-	-	16	4	7	-	-	3	0	0	0	0	0	1	0	-
43	0	-	-	-	11	0	7	-	-	2	0	0	0	0	0	0	0	-
44	0	-	-	-	10	5	0	2	-	1	0	0	0	0	0	1	0	1
45	0	-	1	-	5	4	1	6	-	-	2	0	0	0	0	1	0	1
46	0	-	0	-	6	1	6	-	-	-	2	1	0	0	0	2	0	1
47	0	-	0	-	8	5	1	-	-	-	4	1	1	0	0	1	0	0
48	0	1	0	-	7	6	2	-	-	-	2	1	1	0	0	-	0	3
49	2	1	0	-	1	7	4	-	-	-	4	1	1	0	0	-	0	6
50	2	0	0	-	1	22	6	-	-	-	6	1	0	0	0	-	1	9
51	-	2	0	-	1	26	14	-	-	-	6	3	0	0	0	-	-	4
52	-	1	0	-	0	17	11	1	-	-	3	4	0	0	0	-	-	6
53	-	1	0	-	0	21	19	0	-	-	4	6	0	0	0	-	-	4
54	-	3	0	-	1	19	17	0	-	-	6	0	0	0	0	-	-	5
55	-	1	0	-	1	16	7	0	-	-	0	1	0	0	0	-	-	3
56	-	2	1	1	0	4	9	1	-	-	5	0	0	0	2	-	-	3
57	-	1	1	1	0	2	4	1	-	-	4	0	0	0	1	-	-	3
58	-	6	2	3	0	2	0	1	-	-	3	1	0	0	0	-	-	1
59	-	5	4	3	2	0	3	2	-	-	2	0	0	1	0	-	-	0
60	-	9	10	1	1	1	1	2	-	-	3	1	0	0	0	-	-	1
61	-	9	7	9	5	4	3	3	-	-	4	1	0	0	0	-	-	6
62	-	11	8	5	1	2	3	-	-	-	4	0	0	0	0	-	-	5
63	-	17	15	4	0	4	5	-	-	-	9	2	0	0	0	-	-	4
64	-	17	7	3	1	3	3	-	-	-	6	0	0	0	0	-	-	6
65	-	11	8	5	1	1	7	-	-	-	7	1	0	0	1	-	-	4
66	-	4	1	2	-	3	3	-	-	-	5	0	-	-	-	-	-	-
67	-	5	1	2	-	2	2	-	-	-	2	1	-	-	-	-	-	-
68	-	0	3	1	-	1	1	-	-	-	0	-	-	-	-	-	-	-
69	-	1	-	1	-	-	1	-	-	-	3	-	-	-	-	-	-	-
70	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Total	8	109	69	41	455 (1087	189 462	197 533)	10	1	107	28	10	7	52	7	87	2	76

Appendix table 19a. Length-frequency (nos. measured), by haul, of ratfish collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. Does not include fish with broken tails - see Appendix Table 19b.) (Nos. caught in parenthesis, when > nos. measured.)

Fork length (cm)	Haul no.																	
	23	24	26	27	28	29	30	31	32	33	34	36	38	39	40	43	47	48
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
19	-	-	-	-	-	-	1	-	-	-	-	-	-	-	0	-	-	-
20	-	-	-	-	-	-	2	-	-	-	-	-	-	-	0	-	-	-
21	-	-	-	-	-	-	6	-	-	1	-	-	-	-	0	-	-	-
22	-	-	-	-	-	-	3	-	-	0	-	-	-	-	0	-	-	-
23	-	-	-	-	-	-	10	-	-	0	-	-	-	-	0	-	-	-
24	-	-	-	-	-	-	7	-	-	3	-	1	-	-	0	-	-	-
25	-	-	-	-	-	-	6	-	-	3	-	1	-	-	1	-	-	-
26	-	-	-	-	-	-	10	-	-	3	1	2	-	-	4	-	-	-
27	-	-	-	-	-	-	3	2	-	3	2	2	-	-	3	-	-	3
28	-	-	-	-	-	-	1	1	-	5	0	6	-	-	6	-	-	2
29	-	-	-	-	-	-	0	1	-	13	5	6	-	2	8	-	-	4
30	-	-	-	-	-	-	0	0	-	14	4	8	1	3	18	-	-	2
31	-	-	-	-	-	-	0	2	-	15	2	5	2	5	17	-	-	1
32	-	-	-	-	-	-	3	2	-	14	4	4	2	8	22	-	-	0
33	-	-	-	-	-	-	0	0	-	7	0	1	4	11	24	-	-	0
34	-	3	-	-	1	1	0	1	-	1	1	1	5	8	24	-	-	0
35	-	5	-	-	0	2	0	1	-	3	1	0	8	14	27	-	-	0
36	-	1	-	-	4	1	0	1	-	2	1	0	5	16	26	-	-	0
37	-	1	-	-	1	2	0	1	-	1	1	0	6	27	25	-	-	0
38	-	3	-	-	2	6	2	0	-	0	1	1	10	33	16	-	1	0
39	-	4	-	1	1	8	0	0	-	5	0	1	6	26	16	-	0	0
40	-	4	-	0	4	5	0	0	-	2	1	1	11	17	15	-	1	0
41	-	3	-	0	4	13	0	0	-	4	3	0	16	23	9	-	2	0
42	-	1	-	3	5	5	0	2	-	1	3	0	12	18	11	-	3	0
43	-	2	-	0	12	9	0	1	1	3	3	0	17	15	8	-	1	1
44	1	7	-	5	7	10	0	0	0	3	1	0	15	18	12	-	1	0
45	1	2	-	2	2	12	0	0	0	1	2	0	9	8	12	-	3	0
46	0	3	-	3	10	15	0	0	0	4	1	0	4	8	3	-	5	0
47	1	4	-	2	7	12	2	0	0	3	2	0	9	11	5	-	2	0
48	0	0	-	4	13	6	0	0	0	2	0	1	9	2	3	-	1	0
49	1	2	1	8	7	10	2	0	0	3	0	1	6	8	5	-	2	0
50	1	0	0	5	12	7	0	0	0	6	0	1	17	10	7	-	3	0
51	0	0	0	3	12	8	0	1	0	1	0	2	17	5	5	-	2	1
52	2	0	0	8	9	6	0	0	0	6	1	2	25	7	6	-	0	-
53	0	1	0	4	7	4	0	0	1	2	2	2	18	10	1	1	0	-
54	0	0	0	5	7	4	0	0	-	2	-	1	18	10	4	-	0	-
55	1	0	0	3	0	1	1	0	-	2	-	-	8	7	3	-	0	-
56	0	0	0	4	2	3	-	0	-	3	-	-	2	3	4	-	0	-
57	0	0	0	5	2	0	-	0	-	0	-	-	2	4	1	-	0	-
58	1	0	0	7	3	0	-	1	-	0	-	-	1	1	2	-	0	-
59	1	0	0	4	2	0	-	0	-	1	-	-	3	2	0	-	0	-
60	0	0	0	4	3	1	-	1	-	3	-	-	2	1	7	-	1	-
61	1	0	0	8	2	1	-	-	-	2	-	-	4	1	3	-	0	-
62	1	0	1	2	2	2	-	-	-	1	-	-	3	2	6	-	0	-
63	1	1	-	2	1	0	-	-	-	-	-	-	1	1	2	-	0	-
64	-	-	-	3	2	2	-	-	-	-	-	-	2	2	4	-	1	-
65	-	-	-	1	-	-	-	-	-	-	-	-	1	2	3	-	-	-
66	-	-	-	2	-	-	-	-	-	-	-	-	2	4	2	-	-	-
67	-	-	-	0	-	-	-	-	-	-	-	-	3	0	2	-	-	-
68	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	11	47	2	99	146	156	59	18	2	148	42	49	286	355	383 (1673)	1	29	14

Appendix table 19a. Length-frequency (nos. measured), by haul, of ratfish collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. Does not include fish with broken tails - see Appendix Table 19b.)

Fork length (cm)	Haul no.																
	49	50	51	52	53	56	58	60	61	62	63	67	68	69	70	71	72
13	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1
19	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	0
20	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	0
21	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	1
22	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	0
23	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	1
24	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	0
25	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	1
26	-	-	-	0	-	1	-	-	1	1	-	-	-	-	-	-	0
27	4	-	-	0	1	0	-	-	0	0	1	-	-	-	-	3	1
28	1	-	-	0	0	0	-	-	1	0	0	-	-	-	-	0	3
29	5	1	2	0	0	0	-	-	1	0	1	-	-	-	1	4	0
30	5	0	1	0	2	0	1	-	1	0	0	-	-	-	1	4	0
31	6	1	6	0	0	0	0	-	1	0	1	-	-	1	1	2	2
32	8	0	3	0	0	0	1	-	3	0	0	-	-	0	1	1	1
33	5	0	3	0	1	0	0	1	2	1	0	-	2	2	1	1	1
34	7	0	1	0	0	0	0	0	3	0	1	-	0	8	0	1	0
35	4	0	0	0	0	0	0	1	4	0	0	-	1	3	0	2	0
36	2	0	2	0	0	0	0	1	2	0	1	-	0	6	1	0	0
37	1	0	0	2	0	0	1	0	1	0	1	-	1	6	1	0	0
38	0	1	2	0	0	1	0	3	0	1	1	-	1	6	4	0	0
39	1	0	2	0	0	0	0	4	1	0	1	-	1	1	0	0	0
40	0	0	2	0	0	0	1	1	0	1	0	-	1	4	0	0	1
41	2	1	1	0	0	0	1	0	0	1	1	-	0	3	0	0	0
42	1	1	1	0	1	0	0	0	1	0	1	-	1	1	0	1	0
43	1	-	2	1	1	0	0	1	0	1	0	-	0	3	1	0	0
44	2	-	2	0	0	0	1	0	1	1	0	-	1	2	1	0	0
45	1	-	0	0	0	0	1	0	1	0	0	1	1	3	0	1	0
46	0	-	0	0	0	0	1	0	1	0	0	-	0	1	0	1	0
47	0	-	0	0	0	1	0	0	2	0	1	-	2	1	1	0	0
48	0	-	0	0	0	0	0	0	1	0	0	-	1	0	1	0	0
49	0	-	1	0	0	0	0	0	1	0	0	-	-	1	1	0	0
50	2	-	2	1	0	0	0	0	0	2	0	-	-	1	0	1	0
51	1	-	0	1	1	3	1	0	1	0	1	-	-	1	2	-	0
52	0	-	2	0	0	1	0	0	1	0	1	-	-	0	2	-	0
53	0	-	0	1	0	0	0	0	0	0	0	-	-	1	0	-	0
54	0	-	0	-	0	0	0	0	0	1	0	-	-	1	1	-	0
55	0	-	1	-	0	0	0	0	1	-	0	-	-	1	0	-	0
56	1	-	-	-	0	0	0	0	0	-	0	-	-	0	0	-	0
57	0	-	-	-	0	0	0	0	0	-	0	-	-	1	0	-	0
58	0	-	-	-	0	1	0	0	0	-	0	-	-	1	0	-	0
59	0	-	-	-	0	0	1	1	0	-	0	-	-	1	0	-	1
60	0	-	-	-	1	1	-	0	1	-	0	-	-	0	0	-	-
61	0	-	-	-	-	2	-	0	1	-	0	-	-	0	0	-	-
62	0	-	-	-	-	-	-	1	-	-	0	-	-	1	0	-	-
63	2	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-
64	-	-	-	-	-	-	-	-	-	-	0	-	-	-	1	-	-
65	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
66	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
67	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
68	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
69	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
70	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
71	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
72	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
73	-	-	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-
Total	62	5	36	9	8	11	10	16	34	9	12	1	13	60	25	24	14

Appendix table 19b. Length-frequency (nos. measured), by haul, of ratfish-broken tails collected during G.B.REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Not included in Appendix Table 19a.)

Fork length (cm)	Haul no.												
	29	33	38	39	40	47	50	51	56	57	58	60	69
27	-	1	-	-	-	-	-	-	-	-	-	-	-
32	1	2	-	3	-	-	-	-	-	-	-	-	-
37	1	3	3	1	2	-	-	-	-	1	-	-	-
42	3	0	1	0	1	-	-	-	-	-	-	-	-
47	6	1	9	4	2	3	-	-	5	-	1	2	1
52	2	1	22	13	8	-	1	-	-	-	-	0	2
57	3	-	5	4	9	-	-	-	-	-	-	1	-
62	2	-	4	3	7	-	-	1	-	-	-	-	-
67	-	-	2	-	5	-	-	-	-	-	-	-	-
Total	18	8	46	28	34	3	1	1	5	1	1	3	3

Grouped in 5-cm intervals, eg. 32 = 30-34 etc.

Appendix table 20. Fork-length measurements (cm), by haul, for individual specimens of butter sole, curlfin sole, petrale sole, and slender sole caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Species:	Butter sole					
Haul no:	18	20	23	45	47	54
Fork length (cm)	15	20	29	27	26	25
	19	21	30		27(2)	
	22(2)	23	33		29	
	26	25				
	27	26(2)				
		27(2)				
		30				
		32				
		34				
		38				

Species:	Curlfin sole						
Haul no:	22	26	42	43	46	48	60
Fork length (cm)	19	33	36	29	31	24	29
	22				34		
	25(2)						
	28						
	30(3)						
	31						
	35						

Appendix table 20 (cont'd)

Species:	Petrale sole						
Haul no:	2	4	8	13	15	22	24
Fork length (cm)	30	32	44	44	47	24	21
	34	33	53			26	23(2)
	37	39				27	25
	38	42				28	30
	40	44					41
	41	45					
	43	52					
	44(4)	53					
	45	56					
	47(2)						
	48						
	49(3)						
	50						
	51(3)						
	52						
	53(2)						
	55(2)						
	56(2)						

Species:	Petrale sole						
Haul no:	27	28	32	37	43	44	47
Fork length (cm)	44	42	17	19	21	21	23(2)
	46		20(3)	20	42		24
	52		24(2)	21(2)			26
			25	22(2)			42
			29(2)	24(3)			45
			36	25			46(2)
							52(2)

Appendix table 20 (cont'd)

Species:	Petrale sole						
Haul no:	48	49	52	53	54	56	57
Fork length (cm)	23	34	36	47	18	41	22
	36(2)	44	41		20(3)	43	32
	40		45		22(5)	45	45
	44					49	46
	46					51	
	47					52	
	51					55	
	59						

Species:	Petrale sole						
Haul no:	58	60	61	62	63	66	68
Fork length (cm)	39	22	32(2)	33(2)	40	26	24
	44	34	49	39	42	28	26
	47(2)	43	52	40(2)	43(2)	36	27
		44		43(2)	44		28
				45	47		29
				48(2)			32
				51			33
				53			34
							36
							39
							40(2)
							42
							43(4)
							44
							57

Appendix table 20 (cont'd)

Species:	Petrale sole			
Haul no:	69	70	71	72
Fork length (cm)	19	48	38	36
		51	39(2)	38
		52	40(4)	46
		55	41	
		57	42	
			43(2)	
			44(8)	
			45(5)	
			46(2)	
			47(2)	
			48	
			51	

Appendix table 20 (cont'd)

Species:	Slender sole						
Haul no:	27	28	29	30	31	32	51
Fork length (cm)	17	11	17	16	13	11	9
	21	15(2)	19	17	16	21	10(2)
	22	16(3)	20(2)	18	17	22	17
	24	17(5)	23(2)	21	18(2)		
	25	18(2)	24(2)	22	19		
		19(2)	25	23(3)	22(2)		
		21(2)	26	24(2)	23		
		22(2)	30	25	25		
		23(2)					
		25(2)					
		26(3)					
		28					

Species:	Slender sole					
Haul no:	52	53	54	62	63	72
Fork length (cm)	10	9(2)	19	25	21	24
	12	11		26		26
	25					

Appendix table 21. Fork-length measurements (cm), by haul, for individual specimens of Pacific halibut caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Haul no.	2	4	5	6	7	10	11	12	13	14	15	16
Fork length (cm)	59	44	83	51	48	45	45	52	51	51	58	59
		64		54	53		52	61		65	66	63(2)
		72		59	64		55	64			71	66
		91		61	68		61(2)	65			73	78
				63	69		63	66			80	80
				73	73		66(2)	70				82
				86	76		69	71				
					77		71(2)					
					83		74					
					85		84					
					87		85					
							89					

Haul no.	17	18	19	20	21	22	23	24	26	27	28	30
Fork length (cm)	53	56	48	59	39	49	50	44	38	67	75	67
		58	59	60	40	52	60	50	42	70		94
		60	60	62	46	55	68	54	46	79		
		65	61	69	48	56	69	58	48			
		66	69	74	61	58	77	65(2)	51(2)			
		68	72	76	71	59	79	70	60(3)			
		69	75	80	72	61	88	71	62(2)			
		70	77		85	62		77	65			
		78	86			63		79	67			
						67		99	70(2)			
						73			79			
						76			88			
						87			96			
						92			104			
									123			

Appendix table 21 (cont'd) Pacific halibut

Haul no.	31	32	33	34	35	36	38	39	40	41	42	43
Fork length (cm)	65	60 72	83	81	54	68	66(2) 67 69(2) 71 72(2) 100	61 67(2) 71 76 80 92	53 64 66 73 90	67 71 73 87 96 104	89 90 97	73 93 95 168

Haul no.	44	45	46	47	48	51	53	54	56	60	61	63
Fork length (cm)	85	70 108	46 48(3) 55 69 75	52 60(2) 62(3) 65(2) 66(2) 67(2) 68(2) 69(3) 70(3) 71(4) 72 74(2) 75(2) 76 77(2) 78(3) 79 80 81 82(3) 83 90	57 59 61 65 66 68 69(2) 70(2) 72(4) 74(2) 75 76 77 81(3) 84 87	73	52	56 82 83 123	67 80	68 74 76 97	53	84

Haul no.	68	69
Fork length (cm)	46 54	50

Appendix table 22. Fork-length measurements (cm), by haul, for individual specimens of Sebastes babcocki, S. flavidus, S. maliger, and S. proriger caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

	Sebastes babcocki	S. flavidus								
Haul no.	49	6	8	12	13	14	16	22	30	49
Fork length (cm)	41	50	34 36 37 38(2) 39(2) 40(2) 45 46(4) 47 48(2) 50(4) 52(2) 55	39	43 47 50	48 49(2) 51 54	40	19(2) 20 21 22(2) 23 25	36	28

	S. maliger		S. proriger
Haul no.	22	38	9
Fork length (cm)	36 41	37	26

Appendix table 23. Fork-length measurements (cm), by haul, for individual specimens of lingcod caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Haul no.	1	2	8	10	13	14	15	16	18	20	22	24
Fork length (cm)	88	85	79 93 96	63	88	81 92	87	76	50	49 74	28	45 73

Haul no.	28	32	36	37	38	39	40	41	42	43	45	46
Fork length (cm)	45	25 27(2) 31	47 52	34 72 100	67 80 83(2) 92 96	80	45 47 66 125	90(2) 91 93 111	85 95 115	116	87 88 89 93 96	29 30 31

Haul no.	48	52	54	58	60	61	66	69	72
Fork length (cm)	48 53	86	82	72	109	49	81	91	82

Appendix table 24. Fork-length measurements (cm), by haul, for individual specimens of eelpout, Pacific hake, poacher, sandlance, sculpin, shiner perch, and tomcod caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

	Eelpout							Pacific hake		
Haul no.	2	4	34	49	51	53	57	51	52	53
Fork length (cm)	20	20	24	22	14	15	16	15 22 25	15 27	21

	Poacher										
Haul no.	5	18	20	21	27	31	34	36	37	51	69
Fork length (cm)	18	15 16(5) 17(6) 18(10) 19 21 22(2)	14	17(2)	17 19	18 19 21	16 20	20	17(2)	18	20

	Sandlance		Sculpin			
Haul no.	43	45	46	60	61	69
Fork length (cm)	14	17	8 9	11 12	12 13	10

	Shiner perch							Tomcod		
Haul no.	23	26	32	41	42	43	44	18	20	32
Fork length (cm)	10	12	12	10	12 13	10	10(6) 11(11) 12(3) 13(2)	17 19(2) 20(2)	30	17

Appendix table 25. Fork-length measurements (cm), by haul, for individual specimens of herring caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Haul no.	1	4	9	11	17	18	19	20	23	27	28	29
Fork length (cm)	21 22	21	21	19 20(2) 21(3)	22	23	25	20 21 22 24	20 22 25	20 23	19	21 22

Haul no.	30	37	44	47	48	51	52	56	57	60	62	63
Fork length (cm)	19	20	22	26	18 19 21 22 23	22	21 24(2) 26	21	21	19	21	20 21

Haul no.	66	67
Fork length (cm)	21	19 20

Appendix table 26. Fork-length measurements (cm), by haul, for individual specimens of big skate, black skate, and longnose skate caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

	Big Skate					Black skate							
Haul no.	1	5	9	10	11	16	17	27	29	36	49	51	68
Fork length (cm)	63	102	75 98	106	90	59 64 73 74 91	43 57 75	62	27 53	40	46	47	59

	Longnose skate											
Haul no.	16	17	18	19	20	21	28	36	39	40	41	45
Fork length (cm)	157	85	100 113 118 147	29 41 65	125	64 104	51 89	88	105 127	95 129	92 94 116 120 135	93 111(2) 112 128 141

	Longnose skate				
Haul no.	46	51	56	57	68
Fork length (cm)	81 88	54	105 161	75 152	63

Appendix table 27. Total-length measurements (cm), by haul by sex, for individual specimens of spiny dogfish caught during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Haul no.	1			2	4	5	
Sex	M	F	U	U	U	M	F
Total length (cm)	51	67	96	69	80(2)	47	56
	72	68		71	84	54	57
		85		73(2)	85	58	58
		88		78(3)	86	60	59
		90		79	87	61	60(3)
		92		80(2)	88	62	61
		95		82	90	63(3)	64(2)
				84(2)	91	64(2)	65(2)
				88(2)	92	66	67(3)
				89(2)	94	67	70(4)
				90	96(3)	70	71(2)
				92	97(3)	72	73(2)
				94	98(4)	73	76
				95(3)	100	74	77(3)
				96(2)	101(2)	79	93
				97	105(3)	80	103
				98(2)	106	87	111
				110	107		
					112(2)		

Appendix table 27 (cont'd) spiny dogfish

Haul no.	6		7		8		9	
Sex	M	F	M	F	M	F	M	F
Total length (cm)	64	65(3)	74	72	65	102(2)	77	94
	67	71	80	78		105(2)	92	105
	74	72(2)	83	94		110		111
	77	73(2)		97				
	84	74(3)		106				
	87	76		111(2)				
		77(2)		113				
		78(3)						
		79						
		80						
		81(2)						
		82						
		83						
		84						
		86						
		90						
		91						
		94						
		101						

Appendix table 27 (cont'd) spiny dogfish

Haul no.	10		11	12	13		14	
Sex	M	F	U	F	M	F	M	F
Total length (cm)	76	64	53	94	65(2)	69	69	71
		85	58(2)	95	67	72		77
		108	59(2)	99	69	73		78
			60		77	75(2)		81
			61(3)		81	76		84
			62(2)		85	81		86(2)
			63(3)			82		87
			64(3)			83(2)		91
			65(6)			85(2)		92
			66			86		93
			67(5)			87(2)		95
			68(6)			88		97
			69(3)			92		
			70(3)			99		
			71(3)					
			72(6)					
			73(3)					
			74(4)					
			75(5)					
			76(5)					
			77(5)					
			78(4)					
			79(6)					
			80(2)					
			81(3)					
			82(3)					
			83(5)					
			84(2)					
			85(2)					
			86(3)					
			88					
			89					
			90(2)					
			92(2)					
			93					
			98					
			101					
			108					

Appendix table 27 (cont'd) spiny dogfish

Haul no.	15		16	17	18	19	20
Sex	M	F	F	U	U	U	F
Total length (cm)	61	60	73	74	74	73	84
	73	65	77(2)	81	80	100	91
	74	67	82	82	81	105	94
	80	68	83	85	93		96
	84(4)	69(2)	84	88	94		100(2)
		70(2)	85(3)	90	97		101
		71	87	91	98		102
		73	88	93(2)	102		103
		74(3)	89	95	105		106
		75(4)	90	97(2)	107(2)		
		76(3)	93(2)	99	109		
		78(6)	95(2)	100	110(2)		
		79	96(4)	105	115		
		80(5)	100	109			
		81(5)	102				
		82	103(2)				
		84(3)	106				
		85(2)	108				
		86	109				
		87	110				
		88(2)	115				
		89					
		91					
		95(2)					
		97(2)					
		101					

Appendix table 27 (cont'd) spiny dogfish

Haul no.	21	22		23	24	26	
Sex	U	M	F	F	U	M	F
Total length (cm)	63	72	68(2)	67	88	56	62(3)
	64	81	72	68(2)		63	63(2)
	65	82	76	77		64(2)	64
	66(2)		79	88		65	65(3)
	67		93			66	66
	68(3)		102			67	67
	70					69	68(5)
	71(3)					70(2)	69
	72(3)					71(2)	70(3)
	73(2)					72	71(4)
	74(2)					73(2)	72(2)
	75(3)					74(2)	73
	76					75(3)	74(5)
	78					76	75(5)
	79(3)					77(3)	76
	80					78	77(2)
	82(4)					80(3)	78(2)
	83					81	80(2)
	84					82(2)	81(5)
	91					83	82(3)
	92					84(3)	83(2)
						85	84(10)
						87(2)	85(5)
						88	86(2)
							87
							88(3)
							89(5)
							90
							91
							92(2)
							94(3)
							95
							97(2)
							98
							99(2)
							101(2)
							102(3)
							103

Appendix table 27 (cont'd) spiny dogfish

Haul no.	27		28	29	30	31	32
Sex	M	F	F	F	F	F	F
Total length (cm)	67	66	77	75	89	88	98
	71(2)	67	79	85	93	106(2)	104
	72	68	80(2)	87	100		
	73	69	81(2)	88	108		
	74	70	82	90			
	76	72	83(3)	94			
	87	73	87	97			
	89	74(2)	91	98(2)			
	90	75	97	99(2)			
		76(3)	98	100			
		77	99	101(2)			
		79(3)	100(2)	102(3)			
		80(4)	101	104(2)			
		82(2)	102(3)	105			
		83(3)	103	107			
		84(3)	106	109			
		86(3)	108	110			
		87	109	113			
		88(2)					
		89					
		90(4)					
		91					
		92(3)					
		94(2)					
		96(2)					
		97(2)					
		98(2)					
		99(1)					
		103					
		104					
		105(2)					
		106(2)					
		109					

Appendix table 27 (cont'd) spiny dogfish

Haul no.	33	34		37	38		39	
Sex	U	M	F	F	M	F	M	F
Total length (cm)	71	74	76	92	72	94	78	75
	77		77	95(3)				87
	87		91	96(2)				88(2)
	89		95	98				92
	92		98	99				109
	94(4)		99	100				
	95(2)		101(2)	103				
	96(2)		102	104(3)				
	97		103	107				
	98		104	108				
	100		109(3)	114				
	101(5)		110					
	102		114					
	103(3)							
	104(4)							
	105(3)							
	107							
	110(2)							
	111(2)							
	112							
	114							
	115							

Appendix table 27 (cont'd) spiny dogfish

Haul no.	40	41		42		43		44
Sex	F	M	F	M	F	M	F	F
Total length (cm)	77	88	90(2)	86	66	82	66	80
	81	91	92	87	74	85	76	97(2)
	84		94		80	86	90	98
	91		95		84	87	93	106(2)
	92		120		89	88	96	107
	98				93	90	100	
	106				94(2)		102	
	107				116		105(2)	
							106	
							109	

Appendix table 27 (cont'd) spiny dogfish

Haul no.	45	46		48		49	
Sex	F	M	F	M	F	M	F
Total length (cm)	88	61	63(2)	72	64	78	69
	91(2)	66	64(3)	73	67	80	72
	92(2)	67(2)	65(2)	77	68		74
	95	68(3)	66	79	71		79
	96	70(3)	67(8)	80	74(2)		82
	100	71(4)	68(10)	82	76(2)		87
	102(2)	72(5)	69(5)	83	77(2)		91
	106	73(1)	70(11)	84	81		94(2)
		74(3)	71(7)		83(2)		95(3)
		75(10)	72(5)		88		101(3)
		76(7)	73(16)		89(2)		102
		77(6)	74(12)		90(2)		104
		78(8)	75(9)		91		105
		79(2)	76(6)		94		106
		80(8)	77(9)		96		108
		81(3)	78(7)		97		111
		82(2)	79(8)		98		
		84	80(5)		99		
		88	81(4)		106		
		90	82(7)		115		
			83				
			84(5)				
			85(2)				
			86				
			88				
			89				
			92				
			93(2)				

Appendix table 27 (cont'd) spiny dogfish

Haul no.	51		52		53	54		56
Sex	M	F	M	F	F	M	F	F
Total length (cm)	90	76	94	66	27	63	53	58
		79		78	30(2)	67	56(2)	75
		99		79	33	70	57	77
				80	42	75(2)	58	97
				85	43	78	59	100(2)
				86	51	86	60	101
				89	60	89	63	
				91			65(2)	
				98			66	
				102			67	
				105			68(3)	
							69	
							70(2)	
							75	
							76(2)	
							77	
							80(3)	
							81	
							83(3)	
							84	
							87	
							89	
							92(2)	
							93	

Appendix table 27 (cont'd) spiny dogfish

Haul no.	57		58	60		61	
Sex	M	F	F	M	F	M	F
Total length (cm)	64	65	77	79	70	60	54
		66	92	81	75	62	73(2)
		73	97	83	77	75	78
		80	102	84(2)	78	78	81
		94	113	85	79(2)	83	86
				88	80(2)	87	88
					86(3)		

Appendix table 27 (cont'd) spiny dogfish

Haul no.	62		63		66		67	
Sex	M	F	M	F	M	F	M	F
Total length (cm)	65	43	78	58	53	42	47	48
	72	50	81	61	57	46		59
	78		85	62	61	48		68
	80		86	68	70	50		75
					79	57		
					82	59		
					86	66		
						74		
						76		
						81(2)		
						89		
						99		

Appendix table 27 (cont'd) spiny dogffish

Haul no.	68		69		70	
Sex	M	F	M	F	M	F
Total length (cm)	85	73	52(2)	54	89	67
	90	85	53(2)	56		
			55(3)	57		
			56	60(2)		
			57	62		
			58	63		
			61	65(2)		
			66(2)	66(2)		
			67	68		
			69(2)	72(2)		
			72	73(3)		
			75	74		
			79	76(2)		
			81	77		
				78		
				80		
				81		
				82(5)		
				83(2)		
				84		
				85		
				86(2)		
				88		

Appendix table 28. Length-weight data for selected groundfish species collected during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Fork length	Arrowtooth flounder		English sole		Flathead sole		Pacific sanddab		Rex sole		Slender sole		Ratfish	
(cm)	$\bar{W}$[a]	N	$\bar{W}$	N	$\bar{W}$	N	$\bar{W}$	N	$\bar{W}$	N	$\bar{W}$	N	$\bar{W}$	N
10-14	21	9	-	-	-	-	-	-	10	4	-	-	-	-
15-19	29	9	39	29	49	24	49	6	30	34	33	14	-	-
20-24	102	17	87	36	74	38	121	41	69	36	-	-	32	28
25-29	177	21	159	63	168	23	208	100	126	56	-	-	52	25
30-34	254	25	292	27	286	14	293	29	200	32	-	-	97	46
35-39	422	50	457	32	502	3	-	-	351	31	-	-	196	24
40-44	619	54	616	29	-	-	-	-	524	9	-	-	293	24
45-49	908	65	889	10	-	-	-	-	-	-	-	-	491	25
50-54	1160	48	1066	1	-	-	-	-	-	-	-	-	673	29
55-59	1586	42	-	-	-	-	-	-	-	-	-	-	1006	25
60-64	2051	28	-	-	-	-	-	-	-	-	-	-	1289	38
65-69	2683	9	-	-	-	-	-	-	-	-	-	-	1442	25
70-74	3373	1	-	-	-	-	-	-	-	-	-	-	1800	1
Total		378		227		102		176		202		14		290

[a] $\bar{W}$ = mean weight in grams.

Appendix table 29. Locations of hydrographic and plankton stations, and water temperatures (°C) at standard depths (m), occupied during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984. (Plankton stations noted by asterisk.)

Station/ haul no.	Day/ month	Time (PDT)	N. lat °	'	W. long °	'	Standard depths (m) 0	10	20	30	50	75	100	125	150	200	250	300	Bottom °C	Depth (m)
1*	24/5	2015	51	07	128	19	10.2	9.7	9.7	9.7	9.7	8.6	7.8	7.0	6.7	-	-	-	6.7	185
5*	24/5	2300	51	23	128	42	10.2	9.7	9.6	9.6	9.5	9.1	8.5	7.8	6.9	6.1	-	-	6.1	223
13*	25/5	0405	52	00	129	30	10.0	9.4	9.4	9.4	9.4	8.7	8.3	7.3	6.8	6.1	-	-	6.1	206
21*	25/5	2215	53	00	130	12	9.7	9.7	9.7	9.7	9.0	8.7	8.3	7.1	7.0	5.7	-	-	5.7	229
24*	26/5	0340	53	30	130	46	9.2	9.2	9.2	9.2	9.1	9.1	8.3	7.7	6.8	-	-	-	6.8	165
33*	26/5	0950	54	25	131	20	10.0	10.0	10.0	10.0	8.1	7.4	7.2	7.1	6.7	6.3	-	-	6.3	220
Haul 9	27/5	0805	54	26	131	09	9.7	9.6	10.0	9.7	7.9	7.7	7.5	7.2	-	-	-	-	7.2	139
Haul 12	27/5	1800	54	18	131	24	9.8	9.5	9.1	8.9	8.8	8.2	7.6	-	-	-	-	-	7.6	110
Haul 19	30/5	0805	54	08	131	04	10.0	9.9	9.7	9.7	9.1	8.0	-	-	-	-	-	-	7.7	91
Haul 56	8/6	0807	53	06	130	40	10.6	10.2	10.2	10.0	9.2	8.7	8.3	7.3	6.2	-	-	-	6.2	152
Haul 66	11/6	0810	53	00	130	48	10.7	10.4	10.0	9.8	8.9	8.5	-	-	-	-	-	-	8.2	84
15*	12/6	2210	52	00	130	31	12.1	10.7	10.6	9.4	8.7	8.4	7.6	7.7	6.7	6.0	5.7	5.6	5.0	437
10*	13/6	0150	51	36	130	03	11.6	11.1	10.1	9.8	9.1	8.1	7.6	6.8	6.3	5.9	5.9	5.5	5.1	344
8*	13/6	0530	51	07	129	37	11.4	11.4	10.1	9.8	9.7	8.2	7.7	7.0	6.6	6.0	6.0	5.9	5.5	380
5*	13/6	0932	51	24	128	43	11.5	11.3	10.5	9.8	9.2	8.3	8.0	7.1	6.6	6.0	-	-	6.0	210
1*	13/6	1238	51	07	128	20	12.0	10.7	9.7	9.4	8.9	8.0	6.8	6.7	6.3	-	-	-	6.3	188

Appendix table 30. Locations and contents of Shipek bottom grabs completed by Trudy Forbes (Pacific Geo-Science Center) during G.B. REED Groundfish Cruise No. 84-3, May 24-June 14, 1984.

Sample no.	N. lat		W. long		Depth		Contents of grabs
	°	'	°	'	fath	m	
1	54	22.1	131	00.50	21	38	sgSH
2	54	22.0	131	03.70	44	81	shgsM
3	54	22.0	131	07.00	54	99	sM
4	54	22.0	131	10.50	38	70	mS
5	54	22.0	131	13.80	42	77	mS
6	54	22.0	131	17.00	68	124	mS
7	54	22.0	131	20.50	101	185	sM
8	54	22.0	131	23.90	115	210	M
9	54	22.0	131	27.30	120	220	M
10	54	19.9	131	20.50	82	150	sM
11	54	19.9	131	24.00	91	101	M
12	54	19.9	131	27.30	99	181	M
13	54	19.9	131	30.80	105	192	M
14	54	19.9	131	34.20	106	194	M
15	54	19.9	131	37.50	100	183	mS
16	54	19.9	131	41.00	100	183	S
17	54	19.9	131	44.40	112	205	mS
18	54	19.9	131	47.80	114	209	mS
19	54	19.9	131	51.00	116	212	mS
20	54	22.0	131	51.00	131	240	mS
21	54	22.0	131	47.50	134	245	mS
22	54	22.0	131	44.60	132	241	mS
23	54	22.6	131	41.00	128	234	mS
24	54	22.3	131	37.30	120	220	S
25	54	21.9	131	34.20	124	227	mS
26	54	21.9	131	30.90	126	230	M
27	54	23.8	131	30.90	141	258	M
28	54	23.9	131	34.20	141	258	M
29	54	23.9	131	37.50	146	267	mS
30	54	23.9	131	41.00	156	285	gsM
31	54	24.1	131	44.60	152	278	mS
32	54	24.0	131	47.70	163	298	sM
33	54	23.9	131	51.10	141	258	mgS
34	54	25.9	131	51.20	182	333	mgS
35	54	09.9	131	03.90	58	106	shmS
36	54	09.90	131	00.40	26	48	sshG
37	54	09.90	130	56.80	34	62	shsG
38	54	09.90	130	53.60	53	97	mgS
39	54	12.00	130	53.60	72	132	mS
40	54	12.00	130	56.80	42	77	S
41	54	12.00	131	00.40	36	66	shmS

Appendix table 30 (cont'd)

Sample no.	N. lat °	N. lat '	W. long °	W. long '	Depth fath	Depth m	Contents of grab
42	54	12.00	131	03.90	59	108	sM
43	54	12.00	131	07.00	15	27	shS
44	54	12.00	131	10.50	16	29	shS
45	54	12.00	131	13.60	11	20	sG
46	54	12.00	131	17.40	17	31	shgS
47	54	12.00	131	20.60	13	24	shS
48	54	12.00	131	24.00	12	22	shS
49	54	12.00	131	27.50	12	22	shS
50	54	14.10	131	27.50	14	26	shgS
51	54	14.10	131	24.00	13	24	shS
52	53	56.00	131	53.90	20	37	gshS
53	53	56.00	131	57.00	35	64	shsG
54	53	56.00	131	00.50	44	81	shsG
55	53	56.00	131	03.80	43	79	shS
56	53	56.00	131	07.30	26	48	S
57	53	56.00	131	10.60	20	37	shgS
58	53	56.00	131	14.00	18	33	shsG
59	53	56.00	131	17.50	14	26	sgM
60	53	56.00	131	20.70	17	31	shS
61	53	56.00	131	24.20	16	29	sshG
62	53	54.00	131	24.20	14	26	S
63	53	54.00	131	20.70	17	31	S
64	53	54.00	131	17.30	17	31	shS
65	53	42.10	130	30.00	38	70	shmS
66	53	42.10	130	33.20	31	57	mS
67	53	42.10	130	36.50	36	66	mS
68	53	42.10	130	39.60	71	130	mS
69	53	42.10	130	43.00	74	135	mS
70	53	42.10	130	46.50	62	113	mS
71	53	42.10	130	49.90	32	59	S
72	53	42.10	130	53.20	27	49	shS
73	53	42.10	130	56.50	24	44	shgS
74	53	42.10	131	00.00	22	38	sgSH
75	53	42.10	131	03.20	22	40	shS
76	53	42.10	131	06.20	28	51	shS
77	53	42.10	131	09.60	22	40	shS
78	53	42.10	131	12.90	24	44	shgS
79	53	42.10	131	16.40	26	48	S
80	53	40.00	130	43.00	77	141	mS
81	53	40.00	130	39.80	64	117	mS
82	53	52.00	130	56.50	50	91	sshG
83	53	50.00	130	56.50	46	84	S
84	53	48.10	130	56.50	40	73	S

Appendix table 30 (cont'd)

Sample no.	N. lat °	N. lat '	W. long °	W. long '	Depth fath	Depth m	Contents of grab
85	53	46.00	130	56.50	34	62	S
86	53	44.00	130	56.50	32	59	shS
87	53	40.00	130	56.50	26	48	sG
88	53	38.20	130	56.50	28	51	gS
89	53	36.20	130	56.50	32	59	shsG
90	53	34.00	130	56.50	32	59	shsG
91	53	40.00	131	13.00	19	35	shgS
92	53	40.00	131	16.50	13	24	gshS
93	53	40.00	131	20.00	12	20	S
94	53	40.00	131	23.00	10	18	S
95	53	40.00	131	26.50	11	20	S
96	53	38.00	131	30.00	12	22	shS
97	53	38.00	131	26.90	11	20	S
98	53	38.00	131	23.30	11	20	shS
99	53	38.00	131	20.00	10	18	shS
100	53	38.00	131	16.50	11	20	shS
101	53	38.00	131	13.00	13	24	shS
102	53	36.00	131	13.00	11	20	shS
103	53	36.00	131	16.50	14	26	shS
104	53	36.00	131	19.80	11	20	S
105	53	14.00	130	53.10	65	119	S
106	53	14.00	130	49.90	66	121	S
107	53	14.00	130	46.20	85	155	M
108	53	14.00	130	43.30	93	170	M
109	53	15.80	130	43.30	103	188	M
110	53	17.80	130	43.30	100	183	m Coral
111	53	17.80	130	46.50	84	154	M
112	53	17.80	130	49.80	81	148	S
113	53	17.80	130	53.20	70	128	mS
114	53	17.80	130	56.50	50	91	S
115	53	17.80	131	00.00	43	79	shS
116	53	17.80	131	03.00	35	64	S
117	53	17.80	131	06.50	30	50	S
118	53	06.00	130	39.80	75	137	mS
119	53	06.00	130	43.20	71	128	mS
120	53	06.00	130	46.60	69	126	mS
121	53	06.00	130	49.90	67	123	mS
122	53	06.00	130	53.00	49	90	smG
123	53	06.00	130	56.50	36	66	S
124	53	06.00	131	00.00	30	50	S
125	53	06.00	131	03.10	25	46	shsG
126	53	06.00	131	06.50	21	38	shsG
127	53	06.00	131	09.80	18	33	mshS

Appendix table 30 (cont'd)

Sample no.	N. lat °	N. lat '	W. long °	W. long '	Depth fath	Depth m	Contents of grab
128	53	06.00	131	13.00	17	31	sgSH
129	53	06.00	131	16.50	17	31	shgS
130	53	06.00	131	19.90	17	31	sgSH
131	53	06.00	131	23.30	15	27	sSh
132	53	06.00	131	26.60	16	29	shG
133	53	06.00	131	30.10	16	29	gSH
134	53	06.00	131	33.10	11	20	shG
135	52	52.00	130	30.00	65	119	smG
136	52	52.00	130	26.50	73	134	mgS
137	52	52.00	130	23.10	91	166	S
138	52	52.00	130	20.00	112	205	M
139	52	52.00	130	16.30	124	227	M
140	52	52.00	130	13.00	128	234	mG
141	52	52.00	130	09.70	135	247	M
142	52	52.00	130	06.30	144	263	M
143	52	52.00	130	03.20	145	265	M
144	52	50.00	130	03.20	147	269	M
145	52	50.00	130	06.20	144	263	M
146	52	50.00	130	10.00	139	254	M
147	52	50.00	130	13.00	128	234	mG
148	52	50.00	130	16.60	125	229	M
149	52	50.00	130	20.00	115	210	M
150	52	42.00	130	30.00	88	161	sM
151	52	42.00	130	26.50	79	144	mgS
152	52	42.00	130	23.30	78	143	sG
153	52	42.00	130	20.00	124	227	M
154	52	42.00	130	16.50	125	229	msG
155	52	42.00	130	13.00	139	254	gsM
156	52	42.00	130	09.80	133	243	msG
157	52	42.00	130	06.50	140	256	M
158	52	42.00	130	03.10	148	271	M
159	52	42.00	130	00.00	150	274	M
160	52	44.00	130	00.00	151	276	M
161	52	44.00	130	03.10	150	274	M
162	52	44.00	130	06.50	132	241	mgS
163	52	44.00	130	09.80	140	256	msG
164	52	44.00	130	13.00	140	256	M
165	52	44.00	130	16.50	134	235	gM
166	52	44.00	130	20.00	120	220	M
167	53	06.00	130	36.50	84	154	M
168	53	06.00	130	33.20	92	168	M
169	53	06.00	130	30.00	96	176	M
170	53	06.00	130	26.50	108	198	shM

Appendix table 30 (cont'd)

Sample no.	N. lat °	N. lat '	W. long °	W. long '	Depth fath	Depth m	Contents of grab
171	53	06.00	130	23.00	110	201	M
172	53	08.00	130	23.00	114	209	M
173	53	08.00	130	26.50	111	203	gM
174	53	08.00	130	30.00	111	203	shgM
175	53	08.00	130	33.00	97	177	spongeM
176	53	08.00	130	36.50	91	166	spongeM
177	53	08.00	130	39.80	84	154	M
178	53	08.00	130	43.00	77	141	M
179	53	08.00	130	46.60	69	126	mG
180	53	08.00	130	49.90	65	119	mgS
181	53	08.00	130	53.20	54	99	sG
182	52	32.00	130	56.80	74	135	shsgM
183	52	32.00	130	53.20	50	91	G
184	52	32.00	130	50.00	72	132	mS
185	52	32.00	130	46.60	72	132	S
186	52	32.00	130	43.20	70	128	mS
187	52	32.00	130	39.80	64	117	S
188	52	32.00	130	36.50	64	117	gS
189	52	32.00	130	33.00	80	146	mS
190	52	32.00	130	30.00	89	163	mS
191	52	34.20	130	30.00	96	176	mS
192	52	36.30	130	30.00	93	170	sM
193	52	38.20	130	30.00	80	146	gS
194	52	40.20	130	30.00	80	146	msG
195	52	44.00	130	30.00	79	145	mgS
196	52	46.00	130	30.00	81	148	sM
197	52	48.00	130	30.00	73	134	mshsG
198	52	50.00	130	30.00	73	134	sgM
199	52	50.00	130	26.50	76	139	msG
200	52	48.00	130	26.50	76	139	msG
201	52	46.00	130	26.50	78	143	smG
202	52	44.00	130	26.50	82	150	sgM
203	52	44.00	130	23.30	84	154	mgS
204	52	34.00	130	36.50	80	146	sM
205	52	30.00	130	36.50	57	104	sG
206	52	28.00	130	36.50	69	126	mgS
207	52	26.00	130	36.50	76	139	msG
208	52	24.00	130	36.50	78	143	S
209	52	22.00	130	36.50	81	148	S
210	52	20.00	130	36.50	93	170	gmS
211	52	18.00	130	36.50	95	174	mgS
212	52	16.00	130	36.50	97	177	mgS
213	52	16.00	130	40.00	94	172	sG

Appendix table 30 (cont'd)

Sample no.	N. lat		W. long		Depth		Contents of grab
	°	'	°	'	fath	m	
214	52	16.00	130	43.20	94	172	mgS
215	52	16.00	130	46.60	97	177	gS
216	52	16.00	130	50.00	99	181	S
217	52	16.00	130	53.30	102	187	S

[a]Meaning of abbreviations:

G = gravel	g = gravelly
M = mud	m = muddy
S = sand	s = sandy
SH = shell	sh = shelly